

**ENVIRONMENTAL ASSESSMENT
AND
REGULATORY IMPACT REVIEW
OF
MANAGEMENT MEASURES
FOR SPINY DOGFISH (*Squalus acanthias*)
AND PACIFIC COD (*Gadus macrocephalus*)**

November 2005

Prepared by
Washington Department of Fish and Wildlife and
National Marine Fisheries Service

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1.0 INTRODUCTION

1.1 How This Document is Organized

This document provides background information about, and analysis of, management measures for the spiny dogfish (*Squalus acanthias*) and Pacific cod (*Gadus macrocephalus*) fisheries covered by the Pacific Coast Groundfish Fishery Management Plan (FMP) and developed by the Pacific Fishery Management Council (Council) in collaboration with the National Marine Fisheries Service (NMFS). These measures must conform to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ), which extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore. In addition to addressing MSA mandates, this document is an environmental assessment (EA), pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended.

This document tiers from the environmental impact statement prepared for the 2005-2006 groundfish harvest specifications and management measures titled, “Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish Fishery, Final Environmental Impact Statement including Regulatory Impact Review and Initial Regulatory Flexibility Analysis” (Council, October 2004) (hereafter, 2005-2006 Specs EIS). Federal regulations (40 CFR 1508.28) state “Tiering is appropriate when the sequence of statements or analyses is: (a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis....” In this case, the tiered EA focuses on spiny dogfish and Pacific cod management measures for 2006 where the EIS covered harvest specifications and management measures for the entire Pacific Coast groundfish fishery during 2005-2006.

This document is organized so that it not only contains the analyses required under NEPA, but also the Regulatory Flexibility Act (RFA), and Executive Order (EO) 12866, which mandates an analysis similar to the RFA. For the sake of brevity, this document is referred to as an EA, although it contains required elements of an Initial Regulatory Flexibility Analysis (IRFA) pursuant to the RFA and a Regulatory Impact Review (RIR) pursuant to EO 12866.

Environmental impact analyses have four essential components: a description of the purpose and need for the proposed action, a set of alternatives that represent different ways of accomplishing the proposed action, a description of the human environment affected by the proposed action, and an evaluation of the predicted direct, indirect, and cumulative impacts of the alternatives. (The human environment is interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment, 40 CFR 1508.14.) These elements allow the decision maker to look at different approaches to accomplishing a stated goal and understand the likely consequences of each choice or alternative. This EA is organized with Chapters 1 and 2 covering the purpose and need and describing the alternatives, but the next four chapters focus on parts of the human environment potentially affected by the proposed action. Each of these chapters describes both the baseline environment potentially affected by the proposed action and the predicted impacts of each of the alternatives.

Based on this structure, the document is organized in the following chapters:

- The rest of this chapter, Chapter 1, discusses the reasons for new federal management measures for spiny dogfish and Pacific cod fisheries beginning in 2006. This description of **purpose and need** defines the scope of the subsequent analysis.
- Chapter 2 outlines different **alternatives** that have been considered to address the purpose and need.
- Chapter 3 describes the **affected environment**, including West Coast marine ecosystems and essential fish habitat (EFH), groundfish species, non-groundfish species, protected species and the socioeconomic environment.
- Chapter 4 describes the **predicted impacts of the alternatives** on the physical and biological environment. Chapter 4 also describes the socioeconomic environment and how it would be affected by the different alternatives.
- Chapter 5 provides information on those **laws and EOs**, in addition to NEPA, that an action must be consistent with, and how this action has satisfied those mandates.
- Chapter 6 addresses the **Regulatory Flexibility Act and EO 12866** (Regulatory Impact Review).
- Chapter 7 describes the **list of preparers** and the **bibliography**.

1.2 Purpose and Need for the Proposed Action

The proposed action falls within the management framework described in the Groundfish FMP, which enumerates objectives that management measures must satisfy (organized under three broad goals) and authorizes the range and type of measures that may be used to achieve optimum yield (OY). The management regime described in the Groundfish FMP is itself consistent with 10 National Standards described in the MSA. Management measures must be consistent with the goals, objectives, and management framework described in the Groundfish FMP (see Chapter 5.1).

1.2.1 The Proposed Action

The *proposed action*, evaluated in this document, is to establish management measures to constrain total fishing mortality to within harvest specifications for spiny dogfish and Pacific cod, and co-occurring species. These management measures will be established for the calendar year 2006, although they are considered within the context of past management and long-term sustainability of managed fish stocks. Separate harvest specifications (acceptable biological catch (ABC)/OY) are established for each year, 2005 and 2006; management measures like those considered in this EA are intended to keep total fishing mortality during each year within the ABC/OY established for that year. Federally managed Pacific groundfish fisheries occurring off the coasts of Washington, Oregon, and California (WOC) establish the geographic context for the proposed action.

1.2.2 Need (Problems for Resolution)

The *proposed action is needed* to constrain commercial harvests in 2006 to levels that will ensure the spiny dogfish and Pacific cod stocks, and co-occurring species, are maintained at, or restored to, sizes and structures that will produce the highest net benefit to the nation, while balancing environmental and social values. The proposed action is also needed to explicitly separate spiny dogfish and Pacific cod from management measures covering the entire “other fish” complex, which incorporates an amalgam of roundfish, sharks, skates, grenadiers and others.

1.2.3 Purpose of the Proposed Action

The *purpose of this action* is to ensure spiny dogfish and Pacific cod are harvested within ABC/OY limits during 2006 and in a manner consistent with the aforementioned Groundfish FMP and National Standards Guidelines (NSGs) (50 CFR 600 Subpart D), using routine management tools available to the specifications and management measures process (FMP at 6.2.1, 50 CFR 660.370(c)). Chapter 5.1 of this EA describes how the proposed action (preferred alternative) is consistent with the FMP and MSA.

1.3 Background to Purpose and Need

For a background to overall groundfish management and the specifications process, refer to Chapter 1.3 of the 2005-2006 Specs EIS. A background to the purpose and need for spiny dogfish and Pacific cod follows.

Spiny dogfish and Pacific cod are considered “groundfish” and are managed under the Pacific Coast groundfish FMP. Recent harvest levels and the potential for new markets developing off the West Coast has highlighted the potential need for further management measures, such as trip limits, to control harvest of these species in 2006.

Both of these stocks have harvest specifications (also known as ABC/OY) set for 2005 and 2006. Pacific cod has its own ABC/OY and spiny dogfish is included in the “other fish” ABC/OY. Under the groundfish FMP, Pacific cod and “other fish” are considered Category 2 stocks, where the ABC is based on a nonquantitative assessment, average of past landings, or other qualitative information and a numerical OY, with a precautionary adjustment, is determined from the ABC.

The ABC levels for Pacific cod and “other fish” have been based on historical landings. When determining numerical OYs for individual species and species groups for which the ABC is based on a non-quantitative assessment, the Council may apply precautionary adjustments. Since 2000, the Council has adjusted the OYs for several unassessed stocks to 50 percent of the historical average catch levels. Although the ABCs for Pacific cod and “other fish” have been based on historical landings, precautionary adjustments were not used to establish OYs until the 2005-2006 biennial management cycle.

For 2005 and 2006, the OYs for Pacific cod and “other fish” were reduced based on a 50 percent precautionary adjustment. This precautionary adjustment is a Council harvest policy based on guidance from Restrepo et. al. (1998). The OY for Pacific cod in both 2005 and 2006 is 1,600 mt, which represents the ABC (3,200 mt) with a 50 percent precautionary adjustment. In most years since the mid-1990s, less than 500 mt of Pacific cod have been landed. Recent harvest

levels for the Canadian fishery have been set as low as 240 mt to allow for the stock to rebuild and have been combined with closed areas during the spawning season. During the 2005-2006 biennial groundfish specifications and management measures process, the Council considered recent harvest levels as well as harvest specifications established for what is believed to be the same Pacific cod stock in Canadian waters and recommended that an OY of 1,600 mt be adopted for Pacific cod. An OY of 1,600 mt was estimated to be adequate to accommodate recent landings, while not being so high as to encourage targeting. The OY for “other fish,” including spiny dogfish, in both 2005 and 2006 is 7,300 mt, which represents the ABC (14,600 mt) with a 50 percent precautionary adjustment. The Council considered the recent landings, which ranged between approximately 2,500 mt in 1999 and 1,300 mt in 2002, prior to recommending that an OY of 7,300 mt be adopted for “other fish.”

Neither Pacific cod nor spiny dogfish have ever been formally assessed on the West Coast. A formal stock assessment for West Coast spiny dogfish is recommended for the next assessment cycle (2007). Even in the absence of a formal assessment, life history information indicates that characteristics of the spiny dogfish (slow growing, late maturing, low fecundity) make it susceptible to overfishing. Dogfish populations have been depressed as a result of fishing in areas of Puget Sound and have been declared overfished off the East Coast. Pacific cod, on the other hand, is a transboundary stock with most of its biomass distributed north of the U.S.-Canada border. Pacific cod stocks are depressed off the West Coast of Canada.

Spiny dogfish is an important species to West Coast groundfish fisheries, primarily off the Washington coast, and fishermen and processors have worked aggressively to develop and maintain strong markets for this species. A number of trawl and longline fishers and at least one major processor are heavily dependent upon spiny dogfish. Pacific cod is harvested primarily in the limited entry trawl fleet north of 40°10' N. latitude.

In recent years, commercial fishermen targeting spiny dogfish have been constrained by their assumed bycatch of yelloweye and canary rockfish, two species considered by the Council to be overfished, and are managed under rebuilding plans. To provide protection for these overfished stocks, NMFS implemented rockfish conservation areas (RCAs), which are large areas closed to fishing with designated gear types. The boundaries of the RCAs change, depending upon the fishing period. The trawl RCA generally encompasses the area between 100 fm and 200 fm north of 40°10' N. latitude. The non-trawl RCA, which pertains to other gears, such as longline and pot fisheries, extends from the shore seaward to 100 fm year-round north of 46°16'N. lat. and between 30 fm and 100 fm from 46°16'N. lat. south to 40°10'N. lat. The spiny dogfish fishery occurs around the 100-fathom isobath, and dogfish are targeted by both trawl and non-trawl gears. While there are limited entry programs in place for trawl and fixed gear, there is also an open access fishery, which is allowed to target groundfish with fixed gear.

Since effort is not limited, there is a potential to overharvest spiny dogfish and Pacific cod and/or exceed the projected bycatch associated with the fisheries inseason, even with the RCAs in place. To address the potential of exceeding the estimated amounts of canary and yelloweye rockfish bycatch, which was anticipated for the open access fishery in 2005, the NMFS adopted an emergency rule to set bycatch limits for the directed groundfish open access fishery. These limits were originally set at 1.0 mt for canary rockfish and 0.6 mt for yelloweye rockfish; these limits

were raised inseason to 3.0 mt of each species, based on updated projections using NMFS West Coast Groundfish Observer Program data.

Given the life history characteristics of spiny dogfish and their status in other areas, the Council's Groundfish Management Team (GMT) recommended that the Council consider adopting harvest control regulations (i.e., trip limits), beginning in 2006. Given that a spiny dogfish assessment is likely to occur in 2007, the Council decided to wait to set a separate ABC and OY for spiny dogfish following the next assessment cycle (i.e., for the 2009-2010 management period).

Neither stock has had management measures, such as trip limits, specified in the past. This is a potential management concern given the conservation issues of these stocks and, for Pacific cod, 2004 harvests that approached the 2005 OY off the West Coast. The FMP at 6.2.1 requires that management measures, such as trip limits, that have not previously been specified as routine be considered for designation as routine through a two Council meeting process. This action would specify trip limits for spiny dogfish and Pacific cod as routine under Federal regulations at 50 CFR 660.370.

1.4 Public Participation

Spiny dogfish and Pacific cod management policies are set through the Pacific Fishery Management Council process. At their June 2005 meeting, the Council requested that trip limits for spiny dogfish and Pacific cod be developed for initial consideration at their September 2005 meeting. The Council's Groundfish Management Team developed and analyzed trip limit alternatives for spiny dogfish and Pacific cod at their August and September 2005 meetings; these alternatives were discussed with the Council's Groundfish Advisory Subpanel and the public at the Council's September and November 2005 meetings. The Council took final action on the alternatives at its November meeting.

Following the November Council meeting, the public will have an additional opportunity to review and comment on the alternatives when NMFS publishes the preferred alternative for review in the Federal Register.

Specification alternatives, including for Pacific cod and the "Other Fish" category, and proposals related to protection for overfished groundfish stocks underwent scoping through the Council's annual management process for groundfish, which began at the November 2003 Council meeting and continued with subsequent Council, Allocation Committee, Groundfish Management Team meetings and state-sponsored meetings through to the Council's June 2004 meeting. At its June 2004 meeting, the Council made final recommendations for 2005 and 2006 groundfish management and recommendations for management of fisheries targeting non-groundfish species that have the potential to incidentally harvest overfished groundfish species. A full description of the Council's scoping process, alternatives considered, and analyses of those alternatives is provided in the 2005-2006 Specs EIS.

1.5 Related National Environmental Policy Act (NEPA) Documents

Final EIS for the Proposed Acceptable Biological Catch and Optimum Yield Specifications and

Management Measures for the 2005-2006 Pacific Coast Groundfish Fishery, October 2004 (2005-2006 Specs EIS). This EIS for the 2005-06 specifications and management measures discusses the full suite of optimum yield specifications and regulatory measures proposed to protect overfished groundfish species from directed and incidental harvest.

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

The Council considered 2006 management measures for spiny dogfish and Pacific cod at its September and November 2005 meetings. If adopted by NMFS, changes to these trip limit amounts may occur through inseason adjustments, as well as being considered for the 2007-08 biennial groundfish specifications and management measures process.

NMFS will be sending spiny dogfish and Pacific cod management measures for public review and comment, a *Federal Register* publication process that will not be complete by January 1, 2006, the start date of the fishing year. Therefore, the alternatives considered by the Council and NMFS all have an implementation date of March 1, 2006, which is the beginning of the second 2006 two-month cumulative period (Period 2).

In general, the approach in developing the range of alternatives was to review the amount of fish needed to accommodate current harvest levels on a two-month cumulative basis. Alternatives were not structured to provide for higher harvest levels for future developing fisheries. If, in the future, there are markets and/or gears developed to allow new, targeted fisheries, then the Council and NMFS may consider liberalizing trip limits for different sectors, as appropriate.

2.1 Establish Trip Limits for Spiny Dogfish

Spiny dogfish is included in the ABC/OY for “Other Fish.” Because there is not a separate ABC and OY for spiny dogfish, and because there is not enough information about how this species interacts with different gear types, the Council and NMFS are not proposing differential trip limits by gear or sector. Rather, the trip limits across Alternatives 2 and 3 are the same for all commercial sectors in all periods. Table 2.1 shows Alternatives 1 through 3 for spiny dogfish by two-month cumulative trip limit period. Period 1 is for January through February, Period 2 is for March through April, etc.

2.1.1 Spiny dogfish - Alternative 1 (status quo)

Alternative 1 (status quo) is unlimited amounts of spiny dogfish (within the “other fish” OY), which represents the high end of the range.

2.1.2 Spiny dogfish - Alternatives 2 & 2a (preferred)

The GMT did trip frequency analyses for spiny dogfish using fish ticket data from the 2000-2004 fisheries. Alternative 2 represents trip limits that would accommodate practically all of the commercial fishing activity that occurred during this timeframe. Given that spiny dogfish would remain under the “Other Fish” category and would not have a separate OY, it is anticipated that

the trip limits under Alternative 2 would result in nearly achieving, but not exceeding, the “Other Fish” OY. The data reviewed include periods when the West Coast groundfish fisheries were not subject to RCAs; therefore, the resulting harvest levels in 2006 (with RCAs in place) may be lower due to the inaccessibility of these species by one or more gear groups.

Alternative 2a, the preferred alternative, was developed at the November 2005 Pacific Council meeting. Alternative 2a increases the Period 2 trip limits for spiny dogfish from 150,000 lbs per 2 months to 200,000 lbs per 2 months. This increase was recommended after further consultation with the Pacific Council’s Groundfish Advisory subpanel (GAP), an industry-based advisory group. The GAP reported that the Alternative 2 limits were constraining for some vessels during Period 2.

2.1.3 Spiny dogfish - Alternative 3

Alternative 3 represents the more conservative end of the range and could be constraining on one or more fisheries. This alternative would be the most likely to ensure that the “Other Fish” OY would not be exceeded inseason; however, this alternative would not maximize utilization of this species.

Table 2.1. Spiny dogfish trip limit alternatives for the limited entry trawl, limited entry fixed gear, and open access fisheries coastwide.

	Alt 1 (status quo)	Alt 2	Alt 2a (preferred)	Alt 3
Period 1	Status quo – unlimited (rule effective March 1, 2006)			
Period 2	Unlimited	150,000 lbs/2 mo	200,000 lbs/2 mo	150,000 lbs/2 mo
Period 3	Unlimited	150,000 lbs/2 mo		150,000 lbs/2 mo
Period 4	Unlimited	100,000 lbs/2 mo		80,000 lbs/2 mo
Period 5	Unlimited	100,000 lbs/2 mo		80,000 lbs/2 mo
Period 6	Unlimited	100,000 lbs/2 mo		80,000 lbs/2 mo

2.2 Establish Trip Limits for Pacific cod

While there is an OY for Pacific cod, the recent and historical landings are almost all from trawl gear vessels. A review of the 2000-2004 data indicates that a minimal trip limit (~ 1,000 lbs/2 mo.) would accommodate all of the limited entry fixed gear and open access landings. Therefore, the trip limits for limited entry fixed gear and open access remain static across Alternatives 2 and 3. These trip limits were developed to accommodate existing fisheries and are not intended to represent any long-term allocation among sectors. Table 2.2 shows Alternatives 1 through 3 for Pacific cod by two-month cumulative trip limit period.

At the Pacific Council’s November 2005 meeting, the Makah tribe reported that the Pacific cod trip limits being recommended for the non-treaty fleet for 2006 would be constraining for tribal fisheries. The Makah tribe requested a tribal harvest guideline from NMFS of 350 mt - 400 mt. This amount is similar to recent tribal landings and would approximate an equal treaty/non-treaty sharing of harvest on the northern Washington Coast. The 350 mt - 400 mt would be deducted

from the Pacific cod OY in 2006, reducing the amount available for non-tribal fisheries. As with all groundfish species or species groups, Pacific cod landings will be monitored and adjusted as needed to ensure that Pacific cod remains below its OY.

2.2.1 Pacific cod - Alternative 1 (status quo)

Alternative 1 (status quo) is unlimited amounts of Pacific cod (within the Pacific cod OY north of the 43°N. lat. and with the “other fish” OY south of the 43°N. lat.), which represents the high end of the range.

2.2.2 Pacific cod - Alternative 2 (preferred)

The GMT did trip frequency analyses for Pacific cod using fish ticket data from the 2000-2004 fisheries. Alternative 2 represents trip limits that would accommodate practically all of the commercial fishing activity that occurred during this timeframe. Because historical landings are higher by the trawl sector, trip limits for limited entry trawl are higher than limits for limited entry fixed gear and open access. It is anticipated that, if participation in the directed Pacific cod fishery remains at the current level, these trip limits would result in approaching, but not exceeding, the Pacific cod OY. The data reviewed include periods when the West Coast groundfish fisheries were not subject to RCAs; therefore, the resulting harvest levels in 2006 (with RCAs in place) may be lower due to the inaccessibility of these species by one or more gear groups.

2.2.3 Pacific cod - Alternative 3

Alternative 3 represents the more conservative end of the range and could be constraining on one or more fisheries. Alternative 3 differs from Alternative 2 in the limited entry trawl trip limit for Period 5 (September-October) only. The trip limit for limited entry trawl during Period 5 is lower in Alternative 3. This alternative would be the most likely to ensure that the Pacific cod OY would not be exceeded inseason; however, this alternative would not maximize utilization of this species.

Table 2.2. Pacific cod trip limit alternatives for the limited entry trawl, limited entry fixed gear, and open access fisheries coastwide. (LET= limited entry trawl, LEFG= limited entry fixed gear, OA= open access)

	Alt 1 (status quo)	Alt 2 (preferred)		Alt 3	
	LET/LEFG/OA	LET	LEFG/OA	LET	LEFG/OA
Period 1	Status quo – unlimited (rule effective March 1, 2006)				
Period 2	Unlimited	30,000 lb/2 mo	1,000 lb/2 mo	30,000 lb/2 mo	1,000 lb/2 mo
Period 3	Unlimited	70,000 lb/2 mo	1,000 lb/2 mo	70,000 lb/2 mo	1,000 lb/2 mo
Period 4	Unlimited	70,000 lb/2 mo	1,000 lb/2 mo	70,000 lb/2 mo	1,000 lb/2 mo
Period 5	Unlimited	70,000 lb/2 mo	1,000 lb/2 mo	45,000 lb/2 mo	1,000 lb/2 mo
Period 6	Unlimited	30,000 lb/2 mo	1,000 lb/2 mo	30,000 lb/2 mo	1,000 lb/2 mo

3.0 AFFECTED ENVIRONMENT

This section describes the affected environment for the action addressed in this EA. Section 3.1 describes the marine ecosystem off the U.S. West Coast. Section 3.2 describes the groundfish species affected by this action, including spiny dogfish and Pacific cod. Section 3.3 describes the nongroundfish species affected by this action and Section 3.4 describes the protected species covered by the Endangered Species Act, Marine Mammal Protection Act, and the Migratory Bird Treaty Act. Section 3.5 describes the socioeconomic environment.

3.1 West Coast Marine Ecosystems and Essential Fish Habitat

Appendix A, Section 2.3.1 of the 2005-2006 Specs EIS describes the West Coast fishery ecosystem. Marine ecosystems are influenced by the characteristics of the water column and underlying substrate. Key factors characterizing the water column include water depth and temperature, vertical mixing, and currents. Temperature and depth place physiological limits on the distribution of species. Depth and water turbidity determine light penetration, which is required for primary production by phytoplankton. Vertical and horizontal mixing bring nutrients into the photic zone, the upper layers where light penetrates, further influencing the level of primary production. Large-scale surface and subsurface current systems affect water temperature, nutrients, and the transport of planktonic life forms, including larval fish. Nearshore and continental shelf zones are the most productive areas because the relatively shallow depths allow light penetration throughout the water column and complete mixing. Nonetheless, commercially important groundfish species are also found on the continental slope, the zone marking the transition from the shallower shelf to the deep abyssal plain. Physical characteristics of the bottom affect ecosystems. Large coastal features— islands and embayments, for example— affect water circulation. Bottom topography is important to the distribution of benthic species. As implied by their name, many rockfish species prefer hard substrate; flatfish, including commercially important species like Dover sole, require sand or mud substrate.

Climate change is also an important influence on the productivity of marine ecosystems, which in turn has an important effect on fishery production. Scientists have become more aware of cyclical climate changes in recent years. Many people are aware of the El Niño-Southern Oscillation phenomenon; strong events have had noticeable effects across the Pacific including the marine ecosystems off the U.S. West Coast. During such an event, warm water moves up the West Coast, inhibiting the upwelling of cold nutrient-rich water. With fewer nutrients available in the photic zone, primary production suffers, which also affects species higher up on the food chain, including many commercially important groundfish species. Scientists have also identified a much longer-term climate cycle, called the Pacific Decadal Oscillation, or PDO. This is a shift between periods of relatively warm sea surface temperatures off the West Coast and periods of relatively cooler temperatures. During the warm phase, as with El Niño, fisheries production suffers. Scientists now postulate that a warm phase began around 1976 -1977, just at the time domestic fisheries were expanding. As harvest rates increased dramatically, fish stocks were becoming less productive. By examining climate records, scientists estimate that these cycles last for about 20 years, and there is evidence that West Coast waters recently entered a cooler phase, which should enhance productivity. This phenomenon is important when considering overfished species

rebuilding capabilities, because stock productivity is a key factor in estimating how much fishing mortality a stock can sustain and still rebuild in the time period dictated by the rebuilding plan.

The MSA, as amended by the 1996 SFA, requires NMFS and federal fishery councils to describe EFH for the species they manage. They must also enumerate potential threats to EFH from both fishing and nonfishing activities. These descriptions are compiled as part of each FMP.

Amendment 11 to the FMP, completed in 1998, contained an initial description of groundfish EFH. Amendment 19, adopted by the Pacific Council in November 2005 and currently under NMFS review, substantially updated the FMP's consideration of groundfish EFH. A draft EIS supporting Amendment 19 and including EFH descriptions for a broad array of groundfish species and life history stages is online at <http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/NEPA-Documents/DEIS.cfm>. NMFS expects to issue a final EIS on groundfish EFH by the end of 2005. In the 2005-2006 Specs EIS, Chapter 4 in Appendix A gives an overview of how EFH for the West Coast has been identified and characterized to date. That section of the appendix also details what is known about the effects of fishing and non-fishing activities on EFH. The action analyzed in this EA is within the scope of the 2005-2006 Specs EIS's expected effects on groundfish EFH.

3.2 Groundfish Species

There are over 80 species of groundfish managed under the Groundfish FMP. Management of these groundfish species is based on principles outlined in the MSA, Groundfish FMP, and NSGs, which provide guidance on the 10 national standards in the MSA. Stock assessments are based on resource surveys, catch trends in West Coast fisheries, and other data sources. In the 2005-2006 Specs EIS, Section 7.1.3.4 describes, in general terms, how stock assessments are conducted and reviewed before they are applied in West Coast groundfish management. Table 3.2.0-1 in Appendix A of the 2005-2006 Specs EIS depicts the latitudinal and depth distributions of groundfish species managed under the Groundfish FMP.

This section describes the groundfish species that may be directly or indirectly affected by the alternatives.

3.2.1 Spiny Dogfish

Spiny dogfish (*Squalus acanthias*) occur in temperate and subarctic latitudes in both the northern and southern hemispheres, ranging from the Bering Sea to Baja California (Allen & Smith 1988, Castro 1983, Eschmeyer et al. 1983). Dogfish tend to migrate in large schools, and can travel long distances, feeding avidly on their journeys (Bannister 1989). The schools, numbering in the hundreds, exhibit north-south coastal movements and onshore-offshore movements (Castro 1983, Ferguson & Cailliet 1990, Lineaweaver & Backus 1984). The schools tend to divide up according to size and sex, although the young, both male and female, tend to stay together (Ferguson & Cailliet 1990, NOAA 1990). They also make diel migrations from near bottom during the day to near surface at night (NOAA 1990).

For the North Pacific and Bering Sea, Allen and Smith (1988) report that the spiny dogfish is an inner shelf-mesobenthic species with a depth range of up to 900 m. From survey data, they

determined that most dogfish inhabit waters up to 350 m. They occur from the surface and intertidal areas to greater depths (Allen & Smith 1988, Bannister 1989, Castro 1983, Lineaweaver & Backus 1984, NOAA 1990), and are common in estuaries, such as Puget Sound (Allen & Smith 1988) and San Francisco Bay (Ebert 1986), and in shallow bays from Alaska to central California (Eschmeyer et al. 1983). Small juveniles (< 10 years old) are neritic while subadults and adults are mostly sublittoral-bathyal. Subadults are found on muddy bottoms when not found in the water column. Known physical and chemical requirements are euhaline waters of 3.7-15.6°C, with a preferred range of 6-11°C (NOAA 1990).

Spiny dogfish are ovoviviparous, and fecundity is 1-26 eggs per female, per season (Castro 1983, Eschmeyer et al. 1983, Jones & Geen 1977a, NOAA 1990). Males mate annually after reaching sexual maturity at 11-19 years. Females reach sexual maturity at 23-35 years and mate biannually (Jones & Geen 1977a, NOAA 1990). Their gestation period last 18-24 months (usually 23 months), the longest of any vertebrate (Bannister 1989, Jones & Geen 1977a, Nammack et al. 1985, NOAA 1990, Pratt & Casey 1990). Females release their young during the spring in shallow waters (Jones & Geen 1977b, NOAA 1990). Small litters (4-7 pups) are common, but litter size may range from 2-20 pups. Newborn pups range in length from 20-23 cm (Castro 1983, Jones & Geen 1977a, Ketchen 1972, Lineaweaver & Backus 1984, NOAA 1990). Females live longer than males; the maximum age of females is about 70 years, compared with a maximum of 36 years for males (Bannister 1989, Castro 1983, Eschmeyer et al. 1983, Ferguson & Cailliet 1990, Jones & Geen 1977a, Ketchen 1972, Lineaweaver & Backus 1984, McFarlane & Beamish 1986, NOAA 1990). Spiny dogfish seem to be larger at the northern end of their range. Adults usually range in size from 75-103 cm, although they may reach a maximum size of 130 cm (10 kg) (Allen & Smith 1988, Bannister 1989, NOAA 1990). Their growth rate is 1.5-3.5 cm per year (Castro 1983, Ebert 1986). For defense purposes, spiny dogfish possess a strong spine in front of its two dorsal fins that is partially sheathed by toxic tissue (Castro 1983, Jones & Geen 1977a, NOAA 1990).

Spiny dogfish are carnivorous, opportunistic feeders (NOAA 1990). They are voracious predators that can be quite aggressive in pursuit of prey (Castro 1983, Eschmeyer et al. 1983, Ferguson & Cailliet 1990, Jones & Geen 1977b). They are important predators on many commercial fishes and invertebrates (NOAA 1990). Their diet consists primarily of fish and crustaceans, especially sand lance, herrings, smelts, cods, capelin, hake, ratfish, shrimps, and crabs. Fish become a more important dietary source as they grow larger (Castro 1983, Ferguson & Cailliet 1990, Jones & Geen 1977b, NOAA 1990). Other food items include worms, krill, squid, octopus, jellyfish, algae, and any carrion (Bannister 1989). Although most of their diet consists of pelagic prey, they also feed on benthic organisms (NOAA 1990). Based on occurrences, 55% of the diet of dogfish off British Columbia was teleosts, 35% crustaceans and 5% mollusks. The principal food items consisted of herring and euphausiids (Jones & Geen 1977b). Pelagic prey consisted of 80% of their diet and they consumed twice as much food in the summer as in the winter (Jones & Geen 1977b, NOAA 1990). They have few natural predators, except blue and tiger sharks and some marine mammals (Castro 1983, Jones & Geen 1977a, NOAA 1990).

3.2.2 Pacific cod

Pacific cod (*Gadus macrocephalus*) are widely distributed in the coastal north Pacific, from the Bering Sea to Southern California in the east, and to the Sea of Japan in the west. Adult Pacific cod occur as deep as 875 m (Allen and Smith 1988), but the vast majority occurs between 50 m and 300 m (Allen and Smith 1988, Hart 1986, Love 1991, NOAA 1990). Along the West Coast, Pacific cod prefer shallow, soft-bottom habitats in marine and estuarine environments (Garrison and Miller 1982), although adults have been found associated with coarse sand and gravel substrates (Garrison and Miller 1982; Palsson 1990). Larvae and small juveniles are pelagic; large juveniles and adults are parademersal (Dunn and Matarese 1987; NOAA 1990). Adult Pacific cod are not considered to be a migratory species. There is, however, a seasonal bathymetric movement from deep spawning areas of the outer shelf and upper slope in fall and winter to shallow middle-upper shelf feeding grounds in the spring (Dunn and Matarese 1987; Hart 1986; NOAA 1990; Shimada and Kimura 1994).

Pacific cod have external fertilization (Hart 1986, NOAA 1990) with spawning occurring from late fall to early spring. Their eggs are demersal. Larvae may be transported to nursery areas by tidal currents (Garrison and Miller 1982). Half of females are mature by three years (55 cm) and half of males are mature by two years (45 cm) (Dunn and Matarese 1987, Hart 1986). Juveniles and adults are carnivorous and feed at night (Allen and Smith 1988; Palsson 1990) with the main part of the adult Pacific cod diet being whatever prey species is most abundant (Kihara and Shimada 1988; Klovach *et al.* 1995). Larval feeding is poorly understood. Pelagic fish and sea birds eat Pacific cod larvae, while larger demersal fishes eat juveniles, including Pacific cod. Adults are preyed upon by toothed whales, Pacific halibut, salmon shark, and larger Pacific cod (Hart 1986, Love 1991, NOAA 1990, Palsson 1990). The closest competitor of the Pacific cod for resources is the sablefish (Allen 1982).

3.2.3 Sablefish

Sablefish (*Anoplopoma fimbria*) are abundant in the north Pacific, from Honshu Island, Japan, north to the Bering Sea, and southeast to Cedros Island, Baja California. There are at least three genetically distinct populations off the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. Large adults are uncommon south of Point Conception (Hart 1973, Love 1991, McFarlane & Beamish 1983a, McFarlane & Beamish 1983b, NOAA 1990).

Adults are found as deep as 1,900 m, but are most abundant between 200 and 1,000 m (Beamish & McFarlane 1988, Kendall & Matarese 1987, Mason *et al.* 1983). Off southern California, sablefish were abundant to depths of 1500 m (MBC 1987). Adults and large juveniles commonly occur over sand and mud (McFarlane & Beamish 1983a, NOAA 1990) in deep marine waters. They were also reported on hard-packed mud and clay bottoms in the vicinity of submarine canyons (MBC 1987).

Spawning occurs annually in the late fall through winter in waters greater than 300 m (Hart 1973, NOAA 1990). Sablefish are oviparous with external fertilization (NOAA 1990). Eggs hatch in about 15 days (Mason *et al.* 1983, NOAA 1990) and are demersal until the yolk sac is absorbed

(Mason et al. 1983). After the yolk sac is absorbed, the age-0 juveniles become pelagic. Older juveniles and adults are benthopelagic. Larvae and small juveniles move inshore after spawning and may rear for up to four years (Boehlert & Yoklavich 1985, Mason et al. 1983). Older juveniles and adults inhabit progressively deeper waters. Approximately 50% of females are mature at 5-6 years (24 inches), and 50% of males are mature at 5 years (20 inches).

Sablefish larvae prey on copepods and copepod nauplii. Pelagic juveniles feed on small fishes and cephalopods, mainly squids (Hart 1973, Mason et al. 1983). Demersal juveniles eat small demersal fishes, amphipods and krill (NOAA 1990). Adult sablefish feed on fishes like rockfishes and octopus (Hart 1973, McFarlane & Beamish 1983a). Larvae and pelagic juvenile sablefish are heavily preyed upon by sea birds and pelagic fishes. Juveniles are eaten by Pacific cod, Pacific halibut, lingcod, spiny dogfish, and marine mammals, such as Orca whales (Cailliet et al. 1988, Hart 1973, Love 1991, Mason et al. 1983, NOAA 1990). Sablefish compete with many other co-occurring species for food, mainly Pacific cod and spiny dogfish (Allen 1982).

3.2.4 Yelloweye Rockfish

Yelloweye rockfish (*Sebastes ruberrimus*) range from the Aleutian Islands, Alaska to northern Baja California; they are common from central California northward to the Gulf of Alaska (Eschmeyer et al. 1983, Hart 1973, Love 1991, Miller & Lea 1972, O'Connell & Funk 1986). Yelloweye rockfish occur in water 25-550 m deep; 95% of survey catches occurred from 50 to 400 m (Allen & Smith 1988).

Yelloweye rockfish are bottom dwelling, generally solitary and sedentary, rocky reef fish, found either on or just over reefs (Eschmeyer et al. 1983, Love 1991, O'Connell & Funk 1986). Boulder areas in deep water (>180 m) are the most densely-populated habitat type and juveniles prefer shallow-zone broken-rock habitat (O'Connell & Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell & Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1973). The age of first maturity is estimated at 6 years and all are estimated to be mature by 8 years (Echeverria 1987). Yelloweye rockfish can grow to 91 cm (Eschmeyer et al. 1983, Hart 1973). Males and females probably grow at the same rates (Love 1991, O'Connell & Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell & Funk 1986). Yelloweye rockfish can live to be 114 years old (Love 1991, O'Connell & Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal et al. 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances and herring (Love 1991). Yelloweyes have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include canchroid crabs, cottids, roughtye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978).

3.2.5 Canary Rockfish

Canary rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja California, and

southeastern Alaska (Boehlert 1980, Boehlert & Kappenman 1980, Hart 1973, Love 1991, Miller & Lea 1972, Richardson & Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson & Laroche 1979). Canary primarily inhabit waters 91-183 m deep (Boehlert & Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991).

Canary rockfish tend to be more mobile than yelloweye rockfish and have been known to congregate in schools. Canary rockfish are most abundant above hard bottoms (Boehlert & Kappenman 1980). In the southern part of its range, the canary rockfish appears to be a reef-associated species (Boehlert 1980). In central California, newly settled canary rockfish are first observed at the seaward, sand-rock interface and farther seaward in deeper water (18-24 m).

Canary rockfish are ovoviviparous and have internal fertilization (Boehlert & Kappenman 1980, Richardson & Laroche 1979). Off California, canary rockfish spawn from November-March and from January-March off Oregon and, Washington, (Hart 1973, Love 1991, Richardson & Laroche 1979). The age of 50% maturity of canary rockfish is 9 years; nearly all are mature by age 13. The maximum length canary rockfish grow to is 76 cm (Boehlert & Kappenman 1980, Hart 1973, Love 1991).

Canary rockfish primarily prey on planktonic creatures, such as krill, and occasionally on fish (Love 1991). Canary rockfish feeding increases during the spring-summer upwelling period when euphausiids are the dominant prey and the frequency of empty stomachs is lower (Boehlert et al. 1989).

3.3 Nongroundfish Species

Nongroundfish species and fisheries targeting them often need to be considered in groundfish management for two reasons. First, they may be caught incidentally in fisheries targeting groundfish. Thus, management measures that change total fishing effort in groundfish fisheries could increase or decrease fishing mortality on incidentally-caught species. Second, those fisheries targeting nongroundfish species may be affected by management measures intended to reduce or eliminate incidental catches of overfished groundfish species in these fisheries. This section describes these species and associated fisheries. See Appendix A, Chapter 3, of the 2005-2006 Specs EIS for more information on nongroundfish species and fisheries.

3.3.1 Pacific Halibut

The spiny dogfish and Pacific cod fisheries occasionally intercept Pacific halibut, a prohibited species, because they are easily caught with trawl and longline gears. Pacific halibut (*Hippoglossus stenolepis*) range from the Hokkaido, Japan to the Gulf of Anadyr, Russia on the Asiatic Coast and from Nome, Alaska to Santa Barbara, California on the North American (Pacific) Coast. They are among the largest teleost fishes in the world, measuring up to 8 ft (2.4 m) in length. With flat, diamond-shaped bodies, Pacific halibut are able to migrate long distances. However, most adults tend to remain on the same grounds year after year, making only a seasonal migration from the more shallow feeding grounds in summer to deeper spawning

grounds in winter (IPHC 1998.)

The major spawning grounds for Pacific halibut are in the north Pacific Ocean within the Gulf of Alaska and Bering Sea (IPHC 1998.) During spawning, which generally occurs from November to March, halibut move into deep water, where the eggs are fertilized. The eggs develop into larvae and grow, drifting slowly upward in the water column. During development, the larvae drift great distances with the ocean currents around the northeast Pacific Ocean in a counterclockwise direction (IPHC 1998.) Young fish then settle to the bottom in the shallow feeding areas. Following two to three years in the nursery areas, young halibut generally counteremigrate, moving into more southerly and easterly waters. Because the West Coast includes the southern most range of Pacific halibut and the major spawning grounds are north and west of this area, the population of halibut off the West Coast is significantly smaller than in other areas of its range. Pacific halibut reach maturity at approximately 8 years for males and 12 years for females. The average age of Pacific halibut in the West Coast commercial fishery was 9.6 in 1996 (IPHC 1998.)

Adult halibut are demersal, living on or near the bottom. They prefer water temperatures ranging from 3 to 8 degrees Celsius and are generally caught between 90 and 900 feet (27 and 274 m), but have been caught as deep as 1,800 ft (549 m) (IPHC 1998.) Adult halibut prey on cod, sablefish, pollock, rockfish, sculpins, flatfish, sand lance, herring, octopus, crab, and clams (IPHC 1998.) Adult halibut are not generally preyed upon by other species due to their size, active nature and bottom dwelling habits.

3.4 Protected Species

Protected species fall under three overlapping categories, reflecting four mandates: the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), and Executive Order 13186 on Responsibilities of Federal Agencies to Protect Migratory Birds. Chapter 5 in Appendix A of the 2005-2006 Specs EIS describes species that occur off the West Coast and are protected under these mandates.

The ESA protects species in danger of extinction throughout all or a significant part of their range and mandates the conservation of the ecosystems on which they depend. Under the ESA, a species is listed as “endangered” if it is in danger of extinction throughout a significant portion of its range and “threatened” if it is likely to become an endangered species within the foreseeable future throughout all, or a significant part, of its range.

Four of the six species found in U.S. waters have been sighted off the West Coast. These species include: loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), and olive ridley (*Lepidochelys olivacea*). However, sea turtles are rarely found in waters along the northern portion of the U.S. West Coast where spiny dogfish and Pacific cod fisheries are concentrated. West Coast Groundfish Observer Program (WCGOP) data has not observed any take of sea turtles in the groundfish fishery. Little is known about the interactions between sea turtles and West Coast fisheries. Directed fishing for sea turtles in West Coast groundfish fisheries is prohibited because of their ESA listings; however, incidental take of sea turtles by longline or trawl gear may occur. (Green, leatherback, and olive ridley sea turtles are

listed as endangered; loggerheads are listed as threatened.) The management and conservation of sea turtles is shared between NMFS and the U.S. Fish and Wildlife Service (USFWS).

In addition to the ESA, the federal MMPA guides marine mammal species protection and conservation policy. Under the MMPA, on the West Coast NMFS is responsible for the management of cetaceans and pinnipeds, while the USFWS manages sea otters. Stock assessment reports review new information every year for strategic stocks and every three years for non-strategic stocks. Strategic stocks are those whose human-caused mortality and injury exceeds the potential biological removal. Marine mammals, whose abundance falls below the optimum sustainable population, are listed as “depleted” under the MMPA. Fisheries that interact with species listed as depleted, threatened, or endangered may be subject to management restrictions under the MMPA and ESA. NMFS publishes an annual list of fisheries in the *Federal Register* separating commercial fisheries into one of three categories based on the level of serious injury and mortality of marine mammals occurring incidentally in that fishery. The categorization of a fishery in the list of fisheries determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. West Coast groundfish fisheries are in Category III, denoting a remote likelihood of, or no known, serious injuries or mortalities to marine mammals. Of the 25 marine mammal species known to occur off the West Coast, 16 may interact with groundfish fisheries. Three of these 16 species—the Guadalupe fur seal, Stellar sea lion, and southern sea otter—are listed as threatened under the ESA.

The USFWS is the primary federal agency responsible for seabird conservation and management. Four species found off the West Coast are listed under the ESA. In 2002, the USFWS classified several seabird species that occur off the Pacific Coast as “Species of Conservation Concern.” These species include: black-footed albatross (*Phoebastria nigripes*), ash storm-petrel (*Oceanodroma homochroa*), gull-billed tern (*Sterna nilotica*), elegant tern (*Sterna elegans*), arctic tern (*Sterna paradisaea*), black skimmer (*Rynchops niger*), and Xantus’s murrelet (*Synthliboramphus hypoleucus*).

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful. In addition to the MBTA, EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, directs federal agencies to negotiate Memoranda of Understanding with the USFWS that would obligate agencies to evaluate the impact on migratory birds as part of any NEPA process. The USFWS and NMFS are working on a Memorandum of Understanding concerning seabirds.

In February 2001, NMFS adopted a National Plan of Action (NPOA) to Reduce the Incidental Take of Seabirds in Longline Fisheries. This NPOA contains guidelines that are applicable to relevant groundfish fisheries and would require seabird incidental catch mitigation if a significant problem is found to exist. As part of NPOA implementation, NMFS assessed the incidental take of seabirds in longline fisheries. During the first year of the WCGOP (September 2001 through October 2002), observers did not document any incidental seabird takes by in the limited entry groundfish longline fleet. (During the assessment period, approximately 30% of landings by the limited entry fixed gear fleet had observer coverage.) Over 60 seabird species occur off the West

Coast. Three of these species—the shorttailed albatross, California brown pelican, and California least tern—are listed as endangered under the ESA. One species, the marbled murrelet, is listed as threatened.

3.5 Socioeconomic Environment

The Pacific Coast groundfish fishery is a multi-species fishery that takes place off the coasts of Washington, Oregon, and California. Maintaining year-round fishing opportunities for groundfish has been one of the primary management objectives for the fishery. Pacific Coast groundfish support or contribute to a wide range of commercial, recreational, and tribal fisheries. These activities have a secondary impact on the fish buyers and processors, suppliers of recreational fishing equipment and services, and ultimately the fishing-dependent communities where vessels dock and fishing families live. For a more extensive description of West Coast groundfish fisheries, see Appendix A of the 2005-2006 Specs EIS.

According to PacFIN data, of 4,579 vessels active during November 2000 through October 2001, 37% landed some groundfish. These vessels accounted for nearly half of the value of all West Coast landings (groundfish and nongroundfish species). Commercial fisheries targeting groundfish are, for the most part, regulated under a limited entry program implemented in 1994. Other fisheries, which either target groundfish or catch them incidentally, but do not hold groundfish limited entry permits, are considered “open access” fisheries although these vessels may possess limited entry licenses for other, state-managed nongroundfish fisheries. The Council sets overall OYs and allocates harvest limits between different regulatory and fishery sectors, including limited entry and open access fisheries.

Marine recreational fisheries consist of both charter and private vessels. Charter vessels are larger vessels for hire, which typically can fish farther offshore than most vessels in the private recreational fleet. Fishing opportunity both in nearshore areas and farther out on the continental shelf are important for West Coast recreational groundfish fishermen.

Four Indian tribes have treaty rights to fish for groundfish, the Makah, Quileute, Hoh and Quinault. There are set tribal allocations for sablefish and Pacific whiting and a harvest set aside for black rockfish, while the other groundfish species’ allocations are determined through the Council process in coordination with the tribes, states, and NMFS.

This socioeconomic environment section is subdivided into sub-sections, describing fishery management and fishery sectors for spiny dogfish and Pacific cod. Section 3.5.1 provides an overview of fisheries management for spiny dogfish and Pacific cod. Section 3.5.2-3.5.4 provides an overview of fishery sectors that catch spiny dogfish and Pacific cod as either a target species or incidentally.

3.5.1 Fisheries Management

Spiny dogfish and Pacific cod are included in Groundfish FMP, with implementing regulations set by NMFS for federal waters (from 3 to 200 miles offshore). Council has not reviewed nor adopted a formal stock assessment for spiny dogfish, therefore, dogfish fall under the “Other

Fish” complex of the Groundfish FMP. The Other Fish stock complex contains all of the unassessed Groundfish FMP species that are neither rockfish (family *Scorpaenidae*) nor flatfish. These species include: big skate, California skate, leopard shark, longnose skate, soupfin shark, spiny dogfish, finescale codling, Pacific rattail, ratfish, kelp greenling, cabezon (north of the California-Oregon border at 42°N. lat.), and Pacific cod (south of the 43°N. lat.).

For many years, the Council and NMFS have taken a precautionary approach in managing unassessed and poorly assessed stocks and stock complexes. Specifically, for unassessed stocks, Council and NMFS have adjusted OYs to 50% of the historical average catch levels; for poorly assessed stocks, the Council has applied a 25% reduction to the assessment value. This precautionary adjustment is a Council harvest policy based on guidance from Restrepo et. al. (1998). The Council recently realized that it had not applied this adjustment to Pacific cod and species in the “Other Fish” and “Other Flatfish” complexes. The Council rectified this, beginning in 2005, and reduced the “Other Fish” OY from 14,600 mt (which is the ABC) to 7,300 mt and reduced the Pacific cod OY from 3,200 mt (which is the ABC) to 1,600 mt.

Beginning in 2002, the West Coast targeted dogfish fisheries have been constrained by provisions to protect overfished rockfish species, primarily yelloweye rockfish and canary rockfish. In 2002, dogfish were prohibited for fixed gear (longline and pot) due to the assumed associated bycatch of yelloweye rockfish. In 2003, the RCA for non-trawl (i.e., fixed gear) fisheries was implemented coastwide. North of 40°10' N. lat., where the longline dogfish fishery occurs, the current non-trawl RCA extends from the shoreline seaward to 100 fms, and the majority of the dogfish catch occurs just inside this closed area. Bycatch data is collected through the NMFS West Coast Groundfish Observer Program (WCGOP). In recent years, WCGOP has concentrated their data collection efforts on limited entry trawl fisheries, roughly 70-80% of the observer days, with the remaining 20-30% covering the limited entry fixed gear, open access and shrimp fisheries. Updated NMFS observer data has previously entered the Council process annually in April for the previous September-August period. Beginning in 2005, updated NMFS observer data will enter the Council process annually in November for the previous January-December period.

West Coast trawl and fixed gear groundfish fisheries occur coastwide, year-round; however, the targeted longline dogfish fishery has historically taken place between February and May, and primarily off the northern Washington coast. About 8-10 Washington-based longline fishers participate in the longline targeted dogfish fishery per year. Trawl vessels have historically targeted dogfish, and a few vessels will sporadically land dogfish throughout the year. There is one major processor, located in Bellingham, which is heavily dependent upon spiny dogfish. These fishers and this processor have worked aggressively to develop and maintain strong markets for dogfish, primarily overseas.

Pacific cod are primarily caught with trawl gear and landed into Puget Sound and the Strait of Juan de Fuca and off Oregon’s northern coast (see Table 4.3). On a coastwide basis, trawl gear landings made up 99.9% of shoreside landings in 2002, 99.7% in 2003, and 99.6% in 2004. Trawl gear landings in Puget Sound and the Strait of Juan de Fuca were 95% of coastwide trawl landings in 2002, 71% in 2003, and 47% in 2004. Trawl gear landings in northern Oregon were 4% of coastwide trawl landings in 2002, 27% in 2003, and 49% in 2004 (see Table 3.4).

In addition, Pacific cod and spiny dogfish are caught incidentally in the Pacific whiting midwater trawl fisheries by both tribal and non-tribal vessels. For spiny dogfish, whiting vessels have caught large amounts, some sectors >250 mt between 2002-2004.

3.5.2 Tribal Fisheries

In 1994, the U.S. government formally recognized that four Washington coastal tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, they may take half of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U&A) fishing areas (described at 60 CFR 660.324). West Coast treaty tribes have formal allocations for sablefish, black rockfish, and Pacific whiting. Members of the four coastal treaty tribes participate in commercial, ceremonial, and subsistence fisheries for groundfish off the Washington coast. Participants in the tribal commercial fisheries use similar gear to non-tribal fishers. Groundfish caught in the tribal commercial fishery pass through the same markets as non-tribal commercial groundfish catch.

There are several groundfish species taken in tribal fisheries for which the tribes have no formal allocations, such as spiny dogfish and Pacific cod¹, and some species for which no specific allocation has been determined. Rather than try to reserve specific allocations of these species, the tribes annually recommend trip limits for these species to the Council, which tries to accommodate these fisheries. Tribal trip limits for groundfish species without tribal allocations are usually intended to constrain direct catch and incidental retention of overfished species in the tribal groundfish fisheries.

The bulk of tribal groundfish landings occur during the March-April halibut and sablefish fisheries. Most continental shelf species taken in the tribal groundfish fisheries are taken during the halibut fisheries, and most slope species are similarly taken during the tribal sablefish fisheries. Approximately one-third of the tribal sablefish allocation is taken during an open competition fishery, in which vessels from the four tribes on the Washington coast have access to this portion of the overall tribal sablefish allocation. The open competition portion of the allocation tends to be taken during the same period as the major tribal commercial halibut fisheries in March and April. The fishery begins in March and goes until some time in the autumn, depending on the number of vessels participating in the fishery. Participants in the halibut and sablefish fisheries tend to use hook-and-line gear, as required by the IPHC. For equity reasons, the tribes have agreed to also use snap-line gear in the fully competitive halibut and sablefish fisheries. Therefore, someone participating in a fully competitive sablefish fishery who did not land any halibut, would not have to meet any IPHC requirements. But according to tribal regulations, they would still have to use snap-line gear.

¹ At the Pacific Council's November 2005 meeting, the Makah tribe reported that the Pacific cod trip limits being recommended for the non-treaty fleet for 2006 would be constraining for tribal fisheries. The Makah tribe requested a tribal harvest guideline from NMFS of 350 mt - 400 mt. This amount is similar to recent tribal landings and would approximate an equal treaty/non-treaty sharing of harvest on the northern Washington Coast. The 350 mt - 400 mt would be deducted from the Pacific cod OY in 2006, reducing the amount available for non-tribal fisheries.

In addition to these hook-and-line fisheries, the Makah tribe annually harvests a whiting allocation using midwater trawl gear. Since 1996, a portion of the U.S. whiting OY has been allocated to the Pacific Coast treaty tribes. To date, only the Makah tribe has fished on the tribal whiting allocation. Makah vessels fitted with mid-water trawl gear have also been targeting widow rockfish and yellowtail rockfish in recent years.

In Appendix A of the 2005-2006 Specs EIS, Table 6-11 shows recorded landings of groundfish species by treaty tribes from 1995 to 2002. Since 1996, Pacific whiting have comprised the vast bulk of tribal landings by volume, even though in 2000 and 2001 whiting landings were relatively low due to reduced coastwide allocations. As shown in Table 6-12, in terms of exvessel revenue, sablefish landings provided well over half of total tribal groundfish revenue each year except 1998, 1999, and 2002.

A specific tribal allocation for spiny dogfish or Pacific cod has not been developed nor implemented. Tribal dogfish landings have been relatively insignificant from 1990 to present (see Table 3.1), except for projected incidental catch by tribal whiting vessels. For example, tribal landings of spiny dogfish were 1.2 mt in 2002, compared to 875.9 mt total West Coast landings (0.1% of total West Coast landings). However, tribal catch of spiny dogfish by tribal whiting vessels was 263.1 mt or 30% of total West Coast landings. Tribal Pacific cod landings were 58.3 mt in 2002, compared to 751.7 mt total West Coast landings (8% of total West Coast landings) (see Table 3.1), while tribal catch of Pacific cod by tribal whiting vessels was 0.04 mt or 0.005% of total West Coast landings.

Table 3.1. Washington coastal tribal spiny dogfish landings (mt), 1990-2004, and Pacific cod landings (mt) 1995-2002. (Note: Years not listed for dogfish had zero to trace amounts of spiny dogfish landings. Values in () in the table are projected take by tribal whiting vessels.)

Year	Spiny dogfish Landings (mt)	Pacific cod Landings (mt)
1990	0.4	
1991	3.5	
1995		1.3
1996	2.5	0.7
1997		1.0
1998		2.2
1999	0.4	1.2
2000	2.8 (37.2)	2.1
2001	(153.3)	4.0 (0.2)
2002	1.2 (263.1)	58.3
2003	3.8 (257.6)	(0.5)

2004	40.1 (273.2)	
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3.5.3 Non-Tribal Commercial Fisheries

The non-tribal commercial fisheries include limited entry and open access fisheries and trawl and non-trawl gears. The non-tribal commercial fishery sectors are limited entry trawl, limited entry fixed gear, and open access. See 6.1.1-6.1.3 of Appendix A of the 2005-2006 Specs EIS for more information on these sectors.

Spiny dogfish are targeted by trawl and longline fisheries on the West Coast, and are generally limited by market availability. By far, the majority of the spiny dogfish fishing activity occurs in the Vancouver management area (see Table 3.2). Pacific cod are also predominately caught in the Vancouver management area. Pacific cod are caught with both non-trawl and trawl gear, with the majority being caught with trawl gear. Pacific cod and spiny dogfish are caught in the Pacific whiting midwater trawl fisheries by non-tribal vessels. For spiny dogfish, whiting vessels have caught large amounts, up to 331 mt in the catcher/processor sector in 2004.

Table 3.2. Coastal spiny dogfish landings (mt) by management area and gear type (setnet included with trawl for Monterey and Conception areas).

		Vancouver	Columbia	Eureka	Monterey	Conception	Total
1990	Longline	132	3	-	-	-	476
	Trawl	340	1	-	-	-	
1991	Longline	208	-	-	-	-	901
	Trawl	669	24	-	-	-	
1992	Longline	177	-	-	-	-	1094
	Trawl	868	47	-	1	1	
1993	Longline	416	-	-	-	-	1259
	Trawl	808	35	-	-	-	
1994	Longline	337	-	-	-	-	1392
	Trawl	959	96	-	-	-	
1995	Longline	7	-	-	-	-	366
	Trawl	316	43	-	-	-	
1996	Longline	53	-	-	-	-	250
	Trawl	182	15	-	-	-	
1997	Longline	82	-	1	-	3	425
	Trawl	335	4	-	-	-	
1998	Longline	-	-	-	-	-	458
	Trawl	405	50	1	1	1	
1999	Longline	44	-	-	-	-	495
	Trawl	406	32	1	7	5	
2000	Longline	318	-	-	-	-	625
	Trawl	279	19	1	6	2	
2001	Longline	218	-	-	-	-	566
	Trawl	334	11	-	1	2	
2002	Longline	409	-	-	-	-	875
	Trawl	439	11	-	16	-	

2003	Longline	237	-	-	-	-	443
	Trawl	195	-	-	1	10	
2004	Longline	225	-	-	-	-	404
	Trawl	145	8	-	20	6	

Source: PacFIN extraction 1/18/05

Non-tribal trawl and longline dogfish landings into Washington, by far, have made up the majority of the West Coast-wide dogfish landings, and have been a significant portion of the total coastwide landings, in recent years (Table 3.3).

Table 3.3. Non-tribal spiny dogfish longline landings (mt) into Washington, 2000-2004.

Year	Spiny dogfish Landings (mt)	% of Longline	% of Total
2000	268	84%	43%
2001	188	86%	33%
2002	376	92%	43%
2003	231	97%	52%
2004	205	91%	51%

Table 3.4. Coastal Pacific Cod Landings (mt) by Management Area and Gear Type

Year	Gear	Vancouver	Columbia	Eureka	Monterey	Conception	UNKN/OTHER	Total
1990	Non-Trawl	5.3	4.1	-	-	0.0	0.0	9.5
	Trawl	639.5	156.7	0.0	-	-	254.7	1,051.0
1991	Non-Trawl	3.5	2.8	0.1	0.0	0.0	0.0	6.5
	Trawl	992.4	259.9	0.2	-	-	536.1	1,788.6
1992	Non-Trawl	5.3	4.9	-	0.6	0.0	0.1	10.9
	Trawl	1,104.4	233.5	0.2	-	-	426.1	1,764.2
1993	Non-Trawl	14.1	61.9	-	0.1	0.1	1.4	77.5
	Trawl	648.5	168.7	0.0	-	-	471.6	1,288.8
1994	Non-Trawl	4.6	11.5	-	-	-	0.1	16.2
	Trawl	539.8	141.2	0.0	-	-	168.2	849.3
1995	Non-Trawl	3.2	6.8	0.1	-	-	-	10.1
	Trawl	409.6	7.3	0.0	-	-	79.2	496.1
1996	Non-Trawl	3.5	7.0	-	-	-	-	10.5
	Trawl	337.2	15.2	0.0	-	-	81.9	434.2
1997	Non-Trawl	1.8	2.0	-	0.0	-	0.0	3.9
	Trawl	530.6	11.8	0.0	0.0	-	51.8	594.2
1998	Non-Trawl	2.3	0.7	-	-	-	0.0	3.0
	Trawl	317.4	12.8	0.0	-	-	78.4	408.6
1999	Non-Trawl	1.5	0.7	-	-	-	0.0	2.2
	Trawl	238.0	1.8	0.0	-	-	37.3	277.2
2000	Non-Trawl	0.7	1.5	0.0	0.0	-	0.1	2.2
	Trawl	264.6	0.7	0.0	-	-	10.6	275.8
2001	Non-Trawl	1.1	0.4	0.0	0.3	-	0.0	1.9
	Trawl	285.3	2.2	0.0	-	-	30.9	318.5
2002	Non-Trawl	0.7	0.2	-	-	-	0.0	0.9
	Trawl	661.2	4.5	-	0.0	-	26.9	692.6
2003	Non-Trawl	2.6	0.2	0.0	0.0	0.0	0.0	2.8
	Trawl	737.9	6.4	0.6	0.0	-	287.9	1,032.8
2004	Non-Trawl	3.9	1.1	-	0.0	-	0.1	5.1
	Trawl	529.9	25.5	0.0	-	-	534.7	1,090.2

Source: PacFIN extraction. August 2005.

Table 3.5. Non-Tribal Pacific Cod Trawl landings (mt) into Washington, 2000-2004.

YEAR	Pacific Cod Landings (mt)	% of Trawl	% of Total
2000	27	99%	95%
2001	0	100%	90%
2002	693	100%	96%
2003	744	100%	72%
2004	288	99%	51%

3.5.4 Recreational Fisheries

Spiny dogfish are generally not targeted by sport fisheries on the West Coast. However, due to the voracious feeding nature of spiny dogfish, they tend to be caught incidentally in all recreational fisheries, and are generally considered a nuisance by anglers. Pacific cod are also not targeted by recreational anglers, though some incidental catch occurs, primarily off Washington.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

This section examines the environmental consequences that could be expected to result from adoption of each of the alternatives. As discussed in Chapter 1.0, Purpose and Need for Action, the purpose in and need for considering the actions analyzed in this document are to:

- Constrain commercial harvests in 2006 to levels that will ensure the spiny dogfish and Pacific cod stocks, and co-occurring species, are maintained at, or restored to, sizes and structures that will produce the highest net benefit to the nation, while balancing environmental and social values
- Ensure spiny dogfish and Pacific cod are harvested within ABC/OY limits during 2006 and in a manner consistent with the aforementioned Groundfish FMP and NSGs, using routine management tools available to the specifications and management measures process.

Therefore, this section will consider the environmental effects of establishing trip limits for spiny dogfish and Pacific cod, beginning in 2006.

This section forms the analytic basis for the comparison of issues across the alternatives detailed in Chapter 2.0. The potential of each alternative to affect one or more components of the human environment is discussed in this section; direct and indirect effects of the alternatives are discussed in this analysis. Direct effects are caused by an action and occur at the same time and place as the action, while indirect effects occur later in time and/or further removed in distance from the direct effects (40 CFR 1508.27).

4.1 Physical Impacts of the Alternatives

Physical impacts generally associated with fishery management actions are effects resulting from changes in the physical structure of the benthic environment as a result of fishing practices (e.g.

gear effects and fish processing discards). Although fishing activity has some effect on the physical environment, including the marine ecosystem and essential fish habitat, none of the alternatives to any of the issues detailed in this EA are expected to have notable or measurable effects on the physical environment, either individually or cumulatively. Establishing trip limits for spiny dogfish and Pacific cod is expected to maintain or slow the harvest rate from status quo (which is unlimited fishing, year-round); therefore, this action could result in neutral to potentially positive effects on the physical environment.

4.2 Biological Impacts of the Alternatives

The biological impacts generally associated with fishery management actions are effects resulting from: 1) harvest of fish stocks that may result in changes in food availability to predators; 2) entanglement and/or entrapment of non-target organisms in active or inactive fishing gear; 3) major shifts in the abundance and composition of the marine community as a result of fishing pressure.

In this section, the alternatives in this EA are examined for their potential effects on the biological environment. The primary areas where the establishment of trip limits could affect the environment are the effects on: 1) the portion of the spiny dogfish and Pacific cod stocks occurring off the West Coast; 2) overfished groundfish stocks, particularly yelloweye and canary rockfish; and 3) protected species, particularly threatened and endangered salmon stocks and seabirds. However, since trip limits are proposed to limit the harvest rate from that which is possible under status quo (which is an unlimited, year-round fishery), the effects on these areas would likely be neutral to positive, rather than negative.

Table 4.1 Effects of the Alternatives on the Biological Environment			
	Effects on Spiny Dogfish and Pacific cod Stocks	Effects on Yelloweye and/or Canary Rockfish	Effects on Protected Species
Alternative 1 (Status quo/No Action) No trip limits; unlimited harvesting year-round	Harvest may increase over time, may negatively impact stocks. Potential negative effects if future stock assessments show spiny dogfish or Pacific cod populations low.	Status quo is not expected to have any change in effects on yelloweye or canary rockfish. Potential negative effects if harvest of target species continues to increase.	Status quo is not expected to have any change in effects on protected species.
Alternatives 2 & 2a (preferred) Establishment of trip limits that generally accommodate current harvest levels	Establishing trip limits is expected to slow down the harvest rate, and potential overall harvest above Alt. 1, which may have a neutral to positive effect. Potential negative effects if future stock assessments show spiny dogfish or Pacific cod populations too low for trip limit levels.	Establishing trip limits is expected to have neutral to positive effects on yelloweye or canary rockfish.	Establishing trip limits is expected to have neutral to positive effects on protected species.
Alternative 3 Establishment of more conservative trip limits that may be	Establishing trip limits is expected to slow down the harvest rate, and potential overall harvest above Alt. 1 & 2, which	Establishing trip limits is expected to have neutral to positive effects on yelloweye or canary rockfish.	Establishing trip limits is expected to have neutral to positive effects on protected

Table 4.1 Effects of the Alternatives on the Biological Environment			
	Effects on Spiny Dogfish and Pacific cod Stocks	Effects on Yelloweye and/or Canary Rockfish	Effects on Protected Species
constraining	may have a positive effect. Potential negative effects if future stock assessments show spiny dogfish or Pacific cod populations too low for trip limit levels.		species.

4.2.1 Effects of the Alternatives on the Spiny Dogfish and Pacific cod

As discussed above in Chapter 3.0, the spiny dogfish and Pacific cod populations off the West Coast are a portion of the overall stock ranges. The Council sets annual harvest amounts for Pacific cod and for the “Other Fish” stock complex, which includes spiny dogfish. None of the alternatives considered within this EA are expected to have a negative effect on the amount of spiny dogfish and Pacific cod taken off the West Coast, when compared to the amounts that have been historically harvested. However, Alternative 1 may have a negative impact if harvest continues to expand over time and reaches levels that are unsustainable for the resources.

In addition, all of the alternatives, Alternatives 1 through 3, may have a negative effect on spiny dogfish or Pacific cod if a future stock assessment shows the stock to be at levels that are too low to sustain harvest at current levels. Currently, the first stock assessment for spiny dogfish is planned for 2007. Pacific cod has never been formally assessed. Because the stock is predominately found in waters north of the U.S./Canada border, a future stock assessment for Pacific cod is not scheduled at this time.

The alternatives consider the amount of spiny dogfish and Pacific cod that can be harvested in a two-month period, under current regulations (i.e., while adhering to the boundaries of the applicable RCA). Given the migratory nature of spiny dogfish, which travel in large schools typically following feed, the locations of spiny dogfish are somewhat unpredictable from year to year. Fishers who have historically targeted spiny dogfish operate in a general area in which spiny dogfish congregate during the early spring months (from mid-February through early May) that is around the 100-fm isobath. Since there is currently no trip limit established for spiny dogfish or Pacific cod, having trip limits in place could positively affect their populations off the West Coast.

4.2.2 Effects of the Alternatives on Yelloweye and Canary Rockfish

In recent years, fishermen have been constrained by their assumed bycatch of yelloweye and canary rockfish, two overfished species managed under rebuilding plans. To provide protection for these overfished stocks, seasonally-variable and gear-specific closed areas, or rockfish conservation areas (RCAs), have been implemented. The RCAs off the Washington coast generally encompass the area between 100-200 fm for trawl gears and 0-100 fm for limited entry and open access fixed gears.

Since effort is not limited, especially in the open access fishery, there is a potential to overharvest spiny dogfish and Pacific cod and/or exceed the projected bycatch associated with these fisheries, even with the RCAs in place. To address the potential of exceeding the estimated amounts of canary and yelloweye rockfish bycatch, which was anticipated for the open access fishery in 2005, the National Marine Fisheries Service (NMFS) adopted an emergency rule in early May to set bycatch limits for the directed groundfish open access fishery. These limits were originally set at 1.0 mt for canary rockfish and 0.6 mt for yelloweye rockfish, and subsequently raised inseason to 3.0 mt of each species, based on updated projections using NMFS West Coast Groundfish Observer Program data. If achieved, those bycatch caps could constrain other open access fisheries.

It is expected that the proposed trip limits in Alternatives 2, 2a and 3 would represent a deterrent to large factory vessels to participate in the open access fishery. Under status quo, such unanticipated participation could result in overharvest of spiny dogfish and Pacific cod, as well as exceeding the estimated bycatch amounts of overfished species. It is anticipated that, if either Alternative 2, 2a, or 3 were selected, the Council could manage bycatch in the open access fishery by projecting amounts preseason, rather than continue the use of bycatch limits in 2006.

None of the alternatives are expected to have any measurable effects on yelloweye or canary rockfish, although Alternatives 2, 2a and 3 may reduce bycatch from status quo. Both stocks are widely distributed off the West Coast of North America, with yelloweye rockfish occurring from the Aleutian Islands to Baja California and canary rockfish occurring from southeastern Alaska to Baja California. Establishing trip limits for spiny dogfish and Pacific cod, Alternatives 2, 2a, and 3, within a small portion of the ranges of both of these rockfish species should have little to no effect on the populations of either species; in any event, the effects are expected to be neutral to positive on the population of canary and yelloweye rockfish, as fishers may be constrained by the trip limit and may take fewer and/or shorter fishing trips as a result. Alternative 1 may have negative effects on canary and yelloweye rockfish if harvest of spiny dogfish and Pacific cod continues to increase over time.

4.2.3 Effects of the Alternatives on Protected Species

None of the alternatives are expected to have any measurable effects on protected species, including threatened or endangered salmon stocks, marine mammals and seabirds. Alternatives 2, 2a and 3, establishing trip limits, may have slightly positive effects on protected species if they limit the time and effort spent fishing. Alternative 1 may have negative effects on protected species if harvest of spiny dogfish and Pacific cod continues to increase over time.

During the spring months when spiny dogfish are congregated in large schools, both wild and hatchery salmon stocks are found feeding off the northern West Coast, particularly fall run stocks, which are those runs of salmon that travel upriver to spawn in the fall. Establishing trip limits is not expected to have any measurable effects on salmon; the difference among the alternatives in their effects on salmon is not measurable and is expected to be negligible.

The alternatives would not alter the number of vessels participating in fisheries off the West Coast; thus, neither of these alternatives is expected to have any measurable effects on West Coast

seabirds. To the extent that the targeted dogfish and Pacific cod fisheries affect seabirds, the difference among the alternatives in how they affect seabirds is likely not measurable.

There is little data now available on the bycatch of seabirds in West Coast groundfish fisheries. However, the NMFS Northwest Fisheries Science Center is collecting information on bycatch of seabirds and other protected species as one component of its new observer program for the West Coast groundfish fisheries. This observer program began in August 2001 and, as the observer program develops a larger information base on groundfish fisheries interactions with seabirds, the agency will be better able to evaluate the effects of fisheries management changes on seabirds.

4.3 Socio-Economic Impacts of the Alternatives

The socio-economic impacts generally associated with fishery management actions are effects resulting from: 1) changes in harvest availability and processing opportunities that may result in unstable income opportunities; 2) changes to access privileges associated with license limitation and individual quota systems; 3) fishing season timing or structure restrictions that may improve or reduce the safety of fishing activity; 4) fishing season timing or structure restrictions that may or may not take into account the social and cultural needs of fishery participants. Of these elements, proposed alternatives and implementing regulations would not affect current access privileges.

In this section, alternative regulations are examined for their potential socio-economic effects. The primary areas where the alternatives could affect fishing industries and communities are: 1) on fishery participant safety; 2) on harvest and income opportunities; and, 3) on the costs to vessels of participating in the fishery. In addition to these industry and community effects, the alternatives could affect the management of the fishery and enforcement of regulatory measures. Table 4.2 details these effects in a matrix format.

Table 4.2 Effects of the Alternatives on the Socio-Economic Environment				
	Effects on Fishery Participant Safety	Effects on Harvest and Income Opportunities	Effects on Cost of Participating in Fishery	Effects on Management and Enforcement
Alternative 1 (Status quo/No Action) No trip limits; unlimited harvesting year-round	Status quo is not expected to have any effect on vessel safety.	Status quo is not expected to have any change in effects on harvest and income opportunities.	Is not expected to have any effect on cost of participating in fishery	Status quo is not expected to have any effect on management or enforcement.
Alternatives 2 & 2a Establishment of trip limits that generally accommodate current harvest levels	Is not expected to have any effect on vessel safety.	Fishing opportunity and incomes is not expected to vary from status quo, as trip limits accommodate current harvest levels.	Is not expected to have any effect on cost of participating in fishery.	Expected to affect enforcement by increasing the number of species with trip limits that need to be tracked for compliance and affect management of the groundfish fishery by increasing the number of species that need to be actively monitored and managed.
Alternative 3 Establishment of more conservative trip limits that may be	Is not expected to have any effect on vessel safety.	Fishing opportunity and incomes may be slightly constrained for a few vessels in one or	Is not expected to have any effect on cost of participating in	Expected to affect enforcement by increasing the number of species with trip limits that need to be tracked for compliance and affect management of

Table 4.2 Effects of the Alternatives on the Socio-Economic Environment				
	Effects on Fishery Participant Safety	Effects on Harvest and Income Opportunities	Effects on Cost of Participating in Fishery	Effects on Management and Enforcement
constraining	safety.	more fisheries.	fishery.	the groundfish fishery by increasing the number of species that need to be actively monitored and managed.

4.3.1 Effects on Fishery Participant Safety

Alternatives 2 and 2a generally establish trip limits that accommodate current harvest levels and Alternative 3 establishes more conservative trip limits; however, both alternatives retain the current boundaries of the trawl and non-trawl RCAs. Because of this, access to fishing grounds is the same as under status quo. All of the alternatives are not expected to have any effect on vessel safety.

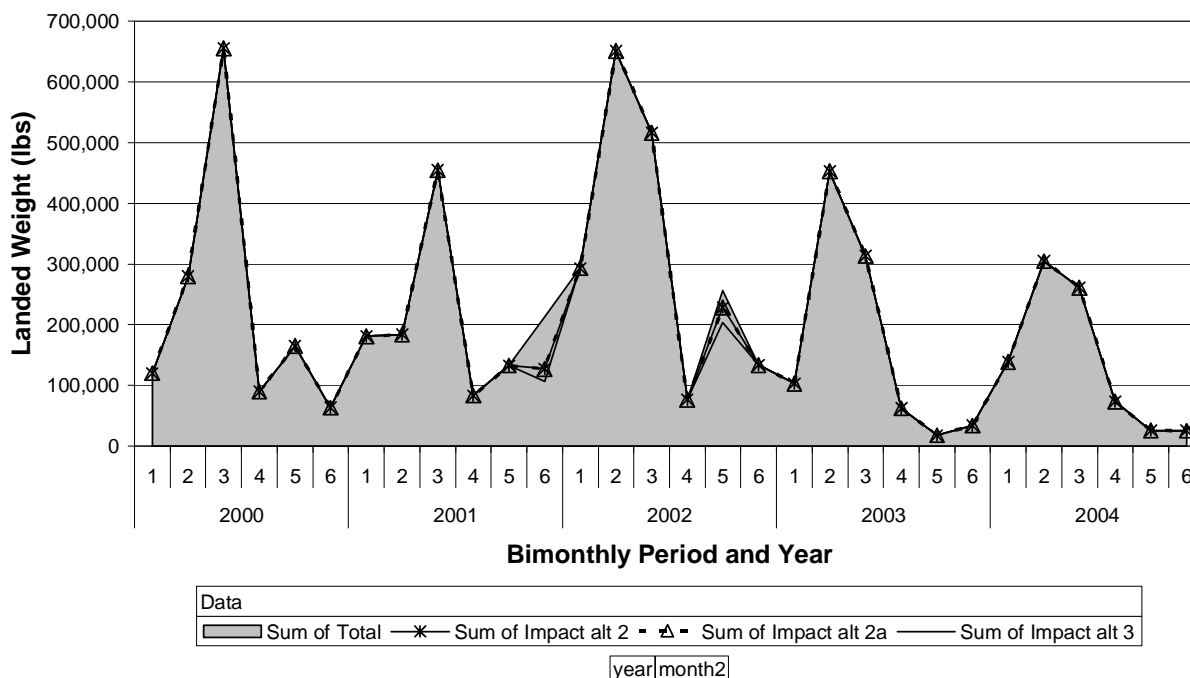
4.3.2 Effects on Fishery Participant Harvest and Income Opportunities

As Alternatives 2 and 2a generally accommodate current harvest levels, they are not anticipated to have any effect on fishing harvest and income opportunities for those vessels that have historically targeted spiny dogfish and/or Pacific cod. Alternative 3 establishes more conservative trip limits, which may be constraining for a few vessels in one or more fisheries. New entrants in the open access fishery, especially larger factory vessels, may be constrained by Alternatives 2, 2a and 3.

Spiny Dogfish

Bimonthly limits for dogfish are designed to largely preserve current harvest levels while ensuring that excessive harvests do not take place that could result in increased take of co-occurring overfished species, or jeopardize the health of the spiny dogfish stock off the Pacific coast. In large part, both Alternative 2 and 3 preserve current harvest rates, though a small number of vessels are slightly constrained by these alternatives if past harvests are a reasonable estimate for future harvests. Alternative 2a for spiny dogfish is expected to preserve current harvest levels without constraining current participants. The figure below, Figure 4.1, shows past landings of spiny dogfish (shaded grey), and imposes bimonthly limits under Alternative 2 and 3 against those past harvests (the results are in black lines). This table shows that only in the largest years do the alternatives constrain the fishery to a level that is less than what actually occurred, and the reduction in landings in this case is relatively minor.

Figure 4.1. Landed Weight of Dogfish by Bimonthly Period, Year, and Alternative (units in lbs)

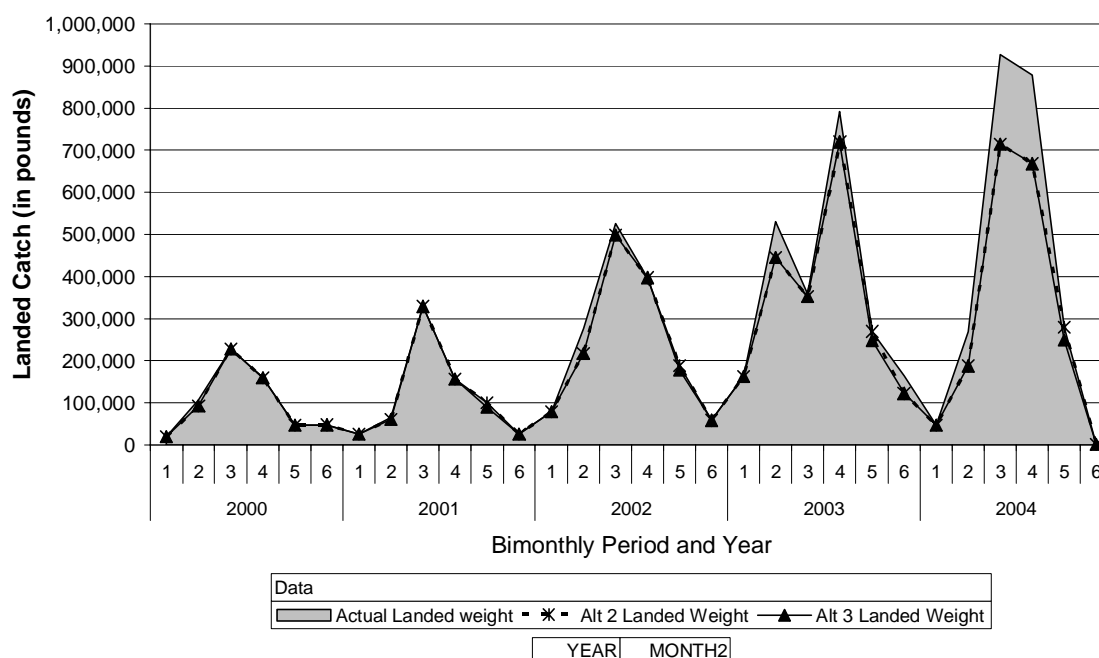


Pacific cod- Limited Entry Trawl Proposed Limits

Trip limit alternatives for Pacific cod are designed to largely preserve the current status of the fishery, but will constrain a small number of trawl vessels. By constraining the catch of some vessels, the OY for Pacific cod is not expected to be exceeded and aggregate catch remains near status quo.

The figure below, Figure 4.2, shows the landings of Pacific cod made with trawl gear by year and two month period. It is evident from this figure that trawl landings of Pacific cod have been growing over the past several years (historic landings are in shaded grey). After imposing Alternative 2 and 3 cumulative limits upon historic landings, it is evident that the growth in landings stops or slows substantially (catch projections by each alternative are indicated with black lines). Both alternatives appear to achieve the goal of halting the growth of landings while maintaining historic revenues, but Alternative 3 is slightly more precautionary than Alternative 2, and slightly reduces catches in period 5 compared to Alternative 2.

Figure 4.2. Landings of Pacific Cod with Trawl Gear by Alternative, Year, and Period



The vessels and ports most affected by Alternatives 2 and 3 are in the Puget Sound and Strait of Juan de Fuca area. Some vessels and ports in the northern Oregon area are also affected, but to a lesser degree. The following tables, Tables 4.3 and 4.4, show landings and exvessel revenue of Pacific cod over the past several years, and measure those landings and revenues against what they would have been if Alternative 2 and 3 were in place during those years. This analysis assumes that future catch of Pacific cod will be similar to recent years.

Table 4.3. Trawl Gear Landings by Port Group, Year, and Alternative (units in lbs)

Port Group	YEAR	Actual Landed Weight	Landed Weight under Alt 2	Landed Weight under Alt 3
Puget Sound / Strait of Juan de Fuca	2000	581,765	568,928	568,928
	2001	626,502	622,152	611,609
	2002	1,447,586	1,359,718	1,349,289
	2003	1,623,381	1,562,100	1,465,815
	2004	1,141,896	790,779	782,834
WA Coast	2000	1,330	1,330	1,330
	2001	4,054	4,054	4,054
	2002	20,068	20,068	20,068
	2003	14,428	14,428	14,428
	2004	74,166	74,166	74,166
N Oregon	2000	24,899	24,899	24,899
	2001	70,472	70,472	70,472
	2002	59,198	59,198	59,198
	2003	616,840	592,916	592,916
	2004	1,175,676	1,022,088	999,628
S Oregon	2000	47	47	47
	2001	1,028	1,028	1,028
	2002	C	C	C
	2003	21,018	21,018	21,018
	2004	11,612	11,612	11,612
California	2000	C	C	C
	2001	30	30	30
	2002	C	C	C
	2003	1,258	1,258	1,258
	2004	103	103	103

C indicates data is restricted due to confidentiality constraints

Table 4.4. Trawl Gear Exvessel Revenue by Port Group, Year, and Alternative (units in USD)

Port Group	YEAR	Actual Exvessel Rev	Exvessel Rev under Alt 2	Exvessel Rev under Alt 3
Puget Sound / Strait of Juan de Fuca	2000	270,512	265,103	265,103
	2001	309,461	307,373	302,222
	2002	731,578	687,120	681,906
	2003	798,021	774,686	726,544
	2004	542,645	374,706	370,574
WA Coast	2000	845	845	845
	2001	2,631	2,631	2,631
	2002	12,659	12,659	12,659
	2003	9,357	9,357	9,357
	2004	36,260	36,260	36,260
N Oregon	2000	14,978	14,978	14,978
	2001	40,947	40,947	40,947
	2002	34,181	34,181	34,181
	2003	369,694	356,745	356,745
	2004	564,298	493,108	482,311
S Oregon	2000	28	28	28
	2001	512	512	512
	2002	C	C	C
	2003	12,720	12,720	12,720
	2004	5,808	5,808	5,808
California	2000	C	C	C
	2001	20	20	20
	2002	C	C	C
	2003	795	795	795
	2004	52	52	52

C indicates data is restricted due to confidentiality constraints

Both Alternative 2 and 3 constrain the majority of trawl vessels with a principal port of landing in the Puget Sound / Strait of Juan de Fuca area. In this area, both alternatives could potentially constrain 6 trawl vessels (see Table 4.5). The other area along the West Coast where vessels may be constrained by proposed Pacific cod limits is in the northern Oregon coast area, though the portion of vessels that may be constrained by the proposed limits represents less than ten percent of the total number of boats landing Pacific cod where their principal port of landing is in that area.

Table 4.5. Number of Trawl Vessels Constrained by Alternative and Principal Port Group

	Alt 2	Alt 3	Total Vessels Landing Pcod
Puget Sound / Strait of Juan de Fuca	6	6	9
WA Coast	0	0	8
N Oregon	3	4	46
S Oregon	0	0	8
California	0	0	5

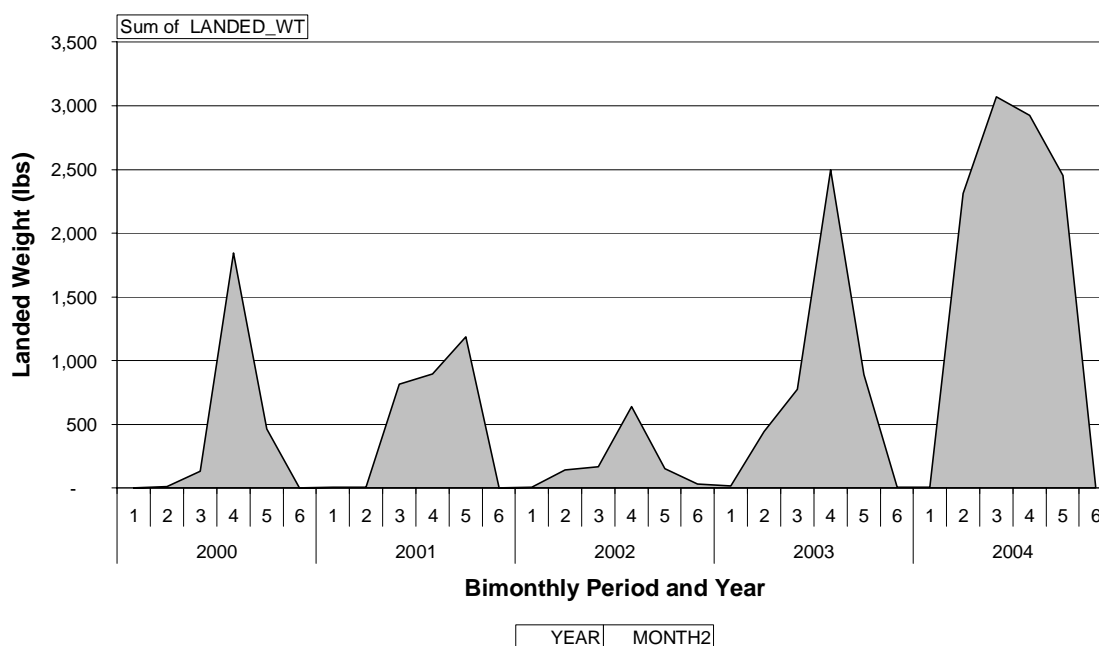
Pacific cod- Fixed Gear Proposed Limits for Limited Entry and Open Access

Bimonthly limits proposed for fixed gear fisheries are designed to accommodate current fishing practices, but limit the growth of Pacific cod landings by vessels using fixed gear. Under the

proposed Pacific cod limits for fixed gear, no vessels are expected to be constrained assuming past fishing practices are an indicator of future fishing practices. However, in the case that interest in Pacific cod grows or is growing, the proposed limits are designed to constrain the fishery to a level that prevents the OY from being exceeded.

In the figure below, Figure 4.3., it is evident that landings of Pacific cod have increased from 2002 – 2004, though these landings are minor compared to trawl landings. The proposed limits are designed to allow the fishery to continue landing Pacific cod at a level similar to 2004, but some modest growth may still occur if proposed limits are met.

Figure 4.3. Landings of Pacific Cod with Fixed Gear by Year and Period



4.3.3 Effects on Cost of Participating in the Fishery

Costs of participating in this fishery are not expected to change under the different alternatives.

4.3.4 Effects on Management and Enforcement

Under the current management regime, the Council adopts annual OYs for groundfish stocks and stock complexes managed under the Groundfish FMP. Using the NMFS observer data and catch data from other sources (e.g., state-sponsored EFPs, NMFS triennial trawl survey, and independent research efforts), the Council develops and recommends management measures for the commercial and recreational directed groundfish fisheries. Management measures are typically based on bycatch assumptions of overfished rockfish, so as to not exceed a rebuilding OY for an overfished stock.

Routine monitoring of the fishing fleet is used to ensure that vessel operators comply with fisheries regulations. Traditional monitoring techniques include the monitoring of fisheries from air and surface craft, observer programs and analysis of catch records and vessel logbooks. The efficiency of these surveillance techniques can be dramatically enhanced by the addition of vessel monitoring systems (VMS). VMS is a tool that is commonly used to monitor vessel activity in relationship to geographically defined management areas where fishing activity is restricted. VMS transmitters installed aboard each vessel automatically determine the vessel's location and transmit that position to a processing center via a communication satellite where the information is validated and analyzed before being disseminated for fisheries management, surveillance and enforcement purposes. Transmitters are designed to be tamper resistant and automatic. All alternatives require the enforcement of area restrictions, depicted by a series of waypoints. Currently, VMS is required on all limited entry vessels, but not open access vessels. At its November 2005 meeting, the Council finalized its recommendation to expand VMS coverage to the open access groundfish fleet beginning in January 2007.

Alternatives 2, 2a and 3 are expected to affect enforcement by increasing the number of species with trip limits that need to be tracked for compliance. Alternatives 2, 2a and 3 are also expected to similarly affect management of the groundfish fishery by increasing the number of species that need to be actively monitored and managed. Alternative 1, status quo, is not expected to change the effect on enforcement and management.

4.4 Cumulative Effects

Cumulative effects must be considered when evaluating the alternatives considered in the EA. Cumulative impacts are those combined effects on quality of the human environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)).

Potential direct and indirect effects of the alternatives being considered are detailed above and summarized in Tables 4.1 and 4.2.

Of the past, proposed, and reasonably foreseeable future actions that are expected to also affect these same waters, the most notable is the action to implement Pacific Coast groundfish fishery management measures for 2006. Fishing for spiny dogfish and Pacific cod occurs in the same waters and affects the same habitats as fishing for other Pacific Coast groundfish species. The effects of the 2006 groundfish specifications and management measures have been described and analyzed by Council staff in an Environmental Impact Statement (completed in October 2004). Actions considered in this EA on spiny dogfish and Pacific cod management are not expected to have effects on the environment that, when considered in combination with groundfish specifications and management measures, measurably alter the effects of the groundfish specifications and management measures. The alternatives are intended to keep spiny dogfish and Pacific cod management compatible with groundfish management of similar commercial fisheries. Trip limits considered in this document are primarily intended to manage the harvest rate of spiny dogfish and Pacific cod and to protect overfished groundfish species.

5.0 OTHER APPLICABLE LAW

5.1 Consistency with the Groundfish FMP and MSA National Standards

5.1.1 FMP Goals and Objectives

The Groundfish FMP goals and objectives are listed below. The way in which the management measures for spiny dogfish and Pacific cod address each objective is briefly described in italics below the relevant statement.

Management Goals.

Goal 1 - Conservation. Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels, and prevent, to the extent practicable, any net loss of the habitat of living marine resources.

Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.

Goal 3 - Utilization. Achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

Objectives. To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation.

Objective 1. Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

The Alternatives employ the same data sources that have been used in past years to monitor groundfish fisheries. In addition, data from the first two years of the WCGOP (August 2001 to August 2003) are available to develop management measures for the 2005-2006 management cycle. They can be used to project bycatch resulting from different management measures and more accurately predict total fishing mortality. A VMS program was implemented at the beginning of 2004, providing real-time location information for participating vessels.

Objective 2. Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group.

Management measure alternatives are intended to constrain total fishing mortality at or below the OY.

Objective 3. For species or species groups which are below the level necessary to produce MSY, consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

Overfished species are subject to rebuilding plans established in the Groundfish FMP. The alternatives may affect incidental harvest levels of overfished species, but are not expected to cause effects beyond those that are already accounted for in the groundfish fishery.

Objective 4. Where conservation problems have been identified for nongroundfish species, and the best scientific information shows the groundfish fishery has a direct impact on the ability of that species to maintain its long-term reproductive health, the Council may consider establishing management measures to control the impacts of groundfish fishing on those species. Management measures may be imposed on the groundfish fishery to reduce fishing mortality of a nongroundfish species for documented conservation reasons. The action will be designed to minimize disruption of the groundfish fishery, in so far as consistent with the goal to minimize the bycatch of nongroundfish species, and will not preclude achievement of a quota, harvest guideline, or allocation of groundfish, if any, unless such action is required by other applicable law.

None of the alternatives include new measures intended to control the impacts of groundfish fishing on nongroundfish stocks.

Objective 5. Describe and identify EFH, adverse impacts on EFH, and other actions to conserve and enhance EFH, and adopt management measures that minimize, to the extent practicable, adverse impacts from fishing on EFH.

The alternatives are not expected to change any impacts from the groundfish fishery on EFH.

Economics.

Objective 6. Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Calculating net costs and benefits in 2005 and 2006 (including the imputed value of non-market costs and benefits) and the present value of all future net benefits under each alternative would be the best way to compare net benefits. Although the analysis estimates changes in income associated with the alternatives, there is no directly comparable measure of the conservation benefits of the alternatives (such as net present value of future harvests), so it is not possible to determine which alternative achieves the greatest possible net economic benefit.

Objective 7. Identify those sectors of the groundfish fishery for which it is beneficial to promote yearround marketing opportunities and establish management policies that extend those sectors' fishing and marketing opportunities as long as practicable during the fishing year.

All of the alternatives have management measures intended to allow commercial fisheries to operate year-round, bearing in mind that individual fisheries may be held for fewer than 12 months. Given low harvest specifications for some overfished species, however, actual harvests

may result in early attainment of a particular specification, necessitating the closure of particular fisheries.

Objective 8. Gear restrictions to minimize the necessity for other management measures will be used whenever practicable.

None of the alternatives consider additional gear restrictions. The alternatives are structured according to different gears used to target spiny dogfish and Pacific cod.

Utilization.

Objective 9. Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific Coast groundfish resources by domestic fisheries.

There has been no foreign fishing on the West Coast for more than a decade, so all of the alternatives meet this objective.

Objective 10. Recognizing the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species.

As in past years, management measures in all of the alternatives use species groups related to particular fisheries or gear to structure trip limits.

Objective 11. Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish. Also, develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. In addition, promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve other information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality.

Trip limits under all the alternatives are set through model projections that include estimated bycatch, based on data derived from the WCGOP. This provides the best estimates of total fishing-related mortality and bycatch currently available.

Objective 12. Provide for foreign participation in the fishery, consistent with the other goals to take that portion of the OY not utilized by domestic fisheries while minimizing conflict with domestic fisheries.

This objective is no longer relevant, since all stocks are fully utilized by domestic fishers.

Social Factors.

Objective 13. When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

The Council process facilitates input from resource user groups, state and federal agencies, and the general public. This promotes the formulation of equitable management measures.

Objective 14. Minimize gear conflicts among resource users.

The Council process facilitates input from resource user groups, state and federal agencies, and the general public. This promotes the formulation of management measures that should minimize gear conflicts among resource users.

Objective 15. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

The alternatives do not substantially change harvest from status quo levels for spiny dogfish and Pacific cod. However, they may limit future harvest levels from the current status quo.

Objective 16. Avoid unnecessary adverse impacts on small entities.

Chapter 6 evaluates the impact of the proposed action on small entities, as required by the Regulatory Flexibility Act. The alternatives are not predicted to result in adverse impacts to small entities.

Objective 17. Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable.

The impacts of all the alternatives on communities are evaluated in Chapter 4. All of the alternatives allow continued fishing opportunity.

Objective 18. Promote the safety of human life at sea.

These alternatives do not affect safety.

5.1.2 National Standards

An FMP or plan amendment and any pursuant regulations must be consistent with ten national standards contained in the MSA (§301). These are:

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The management measures being proposed, trip limits for spiny dogfish and Pacific cod, are intended to keep harvest of these species at or near current harvest levels. For Pacific cod, this

is intended to attain the OY, without exceeding it on a continuing basis. For spiny dogfish, this is intended to prevent increased effort in the fishery until a stock assessment can inform management decisions. In addition, trip limits for both species are intended to limit the effects of these fisheries on overfished species.

National Standard 2 states that conservation and management measures shall be based on the best scientific information available.

Trip limits under all the alternatives are set through model projections that include estimated bycatch, based on data derived from the WCGOP. This provides the best estimates of total fishing-related mortality and bycatch currently available.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

Some groundfish stocks are managed as individual units with specific trip limits. However, given the multispecies nature of many groundfish fisheries, other stocks are grouped in stock complexes and managed accordingly. This generally applies to non-target species for which no individual stock assessments have been performed. Until recently, landings of many species in groundfish fisheries were not recorded individually. Nongroundfish fisheries also may not report incidental groundfish catches at the species level.

This limits the amount of time-series data available for individual species stock assessments. However, individual stocks are assessed whenever possible. Stocks are managed throughout the range of that stock (as opposed to the species), although issues do arise in the case of stocks straddling international borders.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishers, such allocation shall be (A) fair and equitable to all such fishers; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. The proposed measures will not discriminate between residents of different states.

Management measures are developed through the Council process, which facilitates substantial participation by state representatives. Generally, state proposals are brought forward when alternatives are crafted and are integrated to the degree practicable. Decisions about catch allocation between different sectors or gear groups are also part of this participatory process, and emphasis is placed on equitable division while ensuring conservation goals. None of the management measures in the alternatives would allocate specific shares or privileges to one individual or corporation.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

Management measures in the groundfish fishery are not designed specifically for the purpose of efficient utilization. However, lower OY levels and other restrictions are likely to result in further fleet capacity reduction as fishing becomes economically unviable for more vessels. There is broad consensus that capacity reduction in some sectors is needed to rationalize fisheries. In response, the Council and NMFS implemented a fixed gear permit stacking program through Amendment 14 to the FMP. NMFS has also completed a trawl vessel buyback program to reduce the size of the limited entry fleet. Additionally, the Council has begun to explore the potential for individual quotas, in part, as a means of providing regulatory flexibility and economically viable fishing communities.

National Standard 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Management measures reflect differences in catch, and in particular bycatch of overfished species, among different fisheries.

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The alternatives do not explicitly address this standard. Generally, by coordinating management, monitoring, and enforcement activities between the three West Coast states duplication, and thus cost, is minimized. Necessary monitoring and enforcement programs, such as the use of fishery observers and implementation of VMS, increase management costs. But these efforts are necessary to effective management.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The impacts of all the alternatives on communities are evaluated in Chapter 4. All of the alternatives allow continued fishing opportunity. The alternatives represent the Council's judgement of the best tradeoff between the need to conserve and rebuild fish stocks and the economic impacts of the necessary management measures. Generally, this tradeoff is resolved by structuring management measures to allow communities to access healthy, harvestable stocks while minimizing catch of overfished stocks.

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Minimizing bycatch, of all species and overfished species in particular, is an important component of the alternatives. Trip limits under all the alternatives are set through model projections that include estimated bycatch, based on data derived from the WCGOP. This provides the best estimates of total fishing-related mortality and bycatch currently available.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

None of the alternatives effect safety.

5.2 Endangered Species Act

Section 7(a)(2) of the Endangered Species Act, as amended, requires that federal agencies “shall, in consultation with and with the assistance of the Secretary [of Commerce or Interior], insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species, or result in the destruction or adverse modification of habitat of such species....” Based on this section of the law (Section 7), action agencies consult with NMFS (for marine species) or FWS (for terrestrial and freshwater species) in cases where a “major construction activity” (which is considered equivalent to the “major federal action” standard under NEPA) could “jeopardize the continued existence” of an endangered species. For fishery management actions in federal waters, NMFS is both the action and consulting agency (although different divisions fulfill these two roles.) Consultations can begin informally, through “phone contacts, meetings, conversations, letters, project modifications and concurrences...” {USFWS and NMFS, 1998 #557}. During consultations, if the lead agency is informed that listed species or critical habitat may be present in the action area, it prepares a biological assessment to disclose the likely adverse effects. This EA contains the information necessary for a biological assessment of the effects of the proposed action on ESA-listed species occurring in the action area. If the action agency determines that the proposed action may affect listed species or designated critical habitat, formal consultation is required. The consulting agency (in this case, NMFS) must issue a Biological Opinion (or BiOp) within 135 days of the initiation of formal consultation. The BiOp may contain “reasonable and prudent measures” that the action agency must implement (in addition to any proposed mitigation) to ensure the proposed action does not jeopardize the continued existence of the species in question. (These may be referred to as “no jeopardy standards.” The Council manages ocean salmon fisheries in part based on such standards for listed salmon species.)

NMFS issued Biological Opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the Pacific Coast groundfish FMP fisheries on Chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon

(Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south/central California, northern California, southern California). These biological opinions have concluded that implementation of the FMP for the Pacific Coast groundfish fishery was not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat.

A formal section 7 consultation under the ESA has been reinitiated for the bottom and mid-water trawl sectors Pacific Coast groundfish fishery. The December 19, 1999 Biological Opinion defined an 11,000 fish Chinook bycatch threshold for the Pacific whiting fishery. During the 2005 Pacific whiting season, the 11,000 fish chinook bycatch threshold was exceeded, triggering reinitiation. In addition, a new analysis of salmon bycatch in the bottom trawl fisheries based on groundfish observer data has been prepared and will be used to update the December 19, 1999 Biological Opinion. The revised Biological Opinion is projected to be completed by February 2006. During the reinitiation, the bottom and mid-water trawl fisheries are within the scope of the December 15, 1999 Biological Opinion.

The proposed alternatives do not constitute an action that may affect endangered/threatened species listed under the Endangered Species Act (ESA) or their habitat within the meaning of the regulations implementing Section 7 of the ESA.

5.3 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 and the ESA are the principle federal laws guiding marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, seals, sea lions, and fur seals while the FWS is responsible for walrus, sea otters, and the West Indian manatee.

Section 118 of the MMPA requires that NMFS publish, at least annually, a list of fisheries placing all U.S. commercial fisheries into one of three categories describing the level of incidental serious injury and mortality of marine mammals in each fishery, with Category I having the highest level of injury and mortality. Definitions of the fishery classification criteria for Categories I, II, and III fisheries are found in the implementing regulations for section 118 of the MMPA (50 CFR part 229.) Groundfish fisheries off the West Coast are considered Category III fisheries, where the annual mortality and serious injury of a stock by the fishery is less than or equal to 1% of the PBR level.

Under the MMPA, marine mammals whose abundance falls below the optimum sustainable population level (usually regarded as 60% of carrying capacity or maximum population size) can be listed as “depleted.” Populations listed as threatened or endangered under the ESA are automatically depleted under the terms of the MMPA. Currently off the West coast of the United States, the Stellar sea lion (*Eumetopias jubatus*) Eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and the Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA and the sperm whale (*Physeter macrocephalus*) WOC stock,

humpback whale (*Megaptera novaeangliae*) WOC-Mexico stock, blue whale (*Balaenoptera musculus*) Eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) WOC stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

Based on its Category III status, incidental takes of these protected species in the spiny dogfish and Pacific cod fisheries are well under their annual PBR levels. None of the proposed alternatives, discussed above, are likely to affect the incidental mortality levels of species protected under the MMPA.

5.4 Migratory Bird Treaty Act and EO 13186

The Migratory Bird Treaty Act (MBTA) of 1918 was enacted to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The Act states that it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource. The Migratory Bird Treaty Act prohibits the directed take of seabirds, but the incidental take of seabirds in the groundfish fishery does occur.

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) supplements the MBTA by requiring Federal agencies to work with the U.S. Fish and Wildlife Service (USFWS) to develop memoranda of understanding (MOU) to conserve migratory birds. NMFS is currently working with the USFWS to implement its MOU. The protocols developed by this consultation will guide agency regulatory actions and policy decisions in order to address this conservation goal. EO 13186 also directs agencies to evaluate the effects of their actions on migratory birds in environmental documents prepared pursuant to the National Environmental Policy Act.

The proposed alternatives are not expected to increase the incidental take of seabirds.

5.5 Paperwork Reduction Act

In response to public complaints about the burden of federal paperwork, the Paperwork Reduction Act (PRA) and its implementing regulations require federal agencies to obtain clearance from the OMB if they plan to collect information from the public. Collecting facts and opinions from ten or more people, by means of a survey for example; requiring individuals to provide information to the general public or to some third party; requiring items (e.g., boxes of fish, fishing gear) or vessels to be labeled or marked; or using technological methods to monitor public compliance with government requirements, including automated collection techniques such as VMS, are all covered by the law and regulations.

The PRA requires agencies to compile an Information Collection Budget (ICB), the total burden the agency will be placing on the public, and to obtain OMB clearance by submitting an OMB-83I form (Paperwork Reduction Act Submission) and a supporting statement. The ICB is submitted annually and lists all new information collecting the agency plans for the upcoming fiscal year. As

part of the ICB, for each planned collection the agency must describe the purpose of the collection, the approximate number of respondents, and the estimated time taken per respondent. If a proposed rule contains an information collection requirement needing clearance under the PRA, a clearance request needs to be submitted to OMB on or before the date the proposed rule is published in the Federal Register. Once OMB receives the request, it has 60 days to review and act on it.

None of the proposed alternatives contain a collection of information and are, therefore, not subject to the requirements of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

5.6 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable.

The proposed action is consistent to the maximum extent practicable with applicable State coastal zone management programs. This determination has been submitted to the responsible state agencies for review under section 307(c)(1) of the CZMA by forwarding a copy of this EA to each of the relevant state agencies.

5.7 EO 12898 (Environmental Justice)

Executive Order 12898 obligates federal agencies to identify and address “disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States” as part of any overall environmental analysis associated with an action. NOAA guidance, NAO 216-6, at 7.02, states that “consideration of E.O. 12898 should be specifically included in the NEPA documentation for decision-making purposes.” Agencies should also encourage public participation, especially by affected communities as part of a broader strategy to address environmental justice issues.

The environmental justice analysis must first identify minority and low-income groups that live in the project area and may be affected by the action. Typically, census data are used to document the occurrence and distribution of these groups. Agencies should be cognizant of distinct cultural, social, economic or occupational factor that could amplify the adverse effects of the proposed action. (For example, if a particular kind of fish is an important dietary component, fishery management actions affecting the availability or price of that fish could have a disproportionate effect.) In the case of Indian tribes, pertinent treaty or other special rights should be considered. Once communities have been identified and characterized and potential adverse impacts of the alternatives are identified, the analysis must determine whether these impacts are disproportionate. Because of the context in which environmental justice developed, health effects are usually considered and three factors may be used in an evaluation: whether the effects are deemed significant, as the term is employed by NEPA; whether the rate or risk of exposure to the effect appreciably exceeds the rate for the general population or some other comparison group; and whether the group in question may be affected by cumulative or multiple sources of exposure. If disproportionately high adverse effects are identified, mitigation measures should be proposed.

Community input into appropriate mitigation is encouraged.

The proposed alternatives are not expected to affect minority and low-income communities. West Coast groundfish tribes are part of the Council's decision-making process on groundfish management issues and tribes with treaty rights to salmon, groundfish, or halibut have a seat on the Council. None of the proposed alternatives affect the timing or management flexibility of any of the tribal fisheries for groundfish.

5.8 EO 13132 (Federalism)

Executive Order 13132 enumerates eight "fundamental federalism principles." The first of these principles states "Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people." In this spirit, the Executive Order directs agencies to consider the implications of policies that may limit the scope of or preempt states' legal authority. Preemptive action having such "federalism implications" is subject to a consultation process with the states; such actions should not create unfunded mandates for the states; and any final rule published must be accompanied by a "federalism summary impact statement."

The Council process offer many opportunities for states (through their agencies, Council appointees, consultations, and meetings) to participate in the formulation of management measures. This process encourages states to institute complementary measures to manage fisheries under their jurisdiction that may affect federally managed stocks.

None of the proposed alternatives would have federalism implications subject to EO 13132.

5.9 EO 13175 (Consultation and Coordination with Indian Tribal Governments)

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates on Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At 302(b)(5), the Magnuson-Stevens Fishery Conservation and Management Act reserves a seat on the Council for a representative of an Indian tribe with federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50% of the harvestable surplus of groundfish available in the tribes' U and A fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. Accordingly, tribal groundfish allocations and regulations have been developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

6.0 REGULATORY FLEXIBILITY ACT AND EO 12866

In order to comply with Executive Order (EO) 12866 and the Regulatory Flexibility Act (RFA), this document also serves as a Regulatory Impact Review (RIR). The RIR and Initial Regulatory Flexibility Analysis (IRFA) have many aspects in common with each other and with EAs. Much of the information required for the RIR and IRFA analyses has been provided above in the EA. The following table, Table 6.1, identifies where previous discussions in the EA relevant to the IRFA/RIR may be found in this document.

Table 6.1. Regulatory Impact Review and Regulatory Flexibility Analysis

RIR Elements of Analysis	Corresponding Sections in EA	IRFA Elements of Analysis	Corresponding Sections in EA
Description of management objectives	1.2	Description of why actions are being considered	1.2
Description of the Fishery	3.0	Statement of the objectives of, and legal basis for actions	1.1, 1.2, 1.3
Statement of the Problem	1.2	Description of projected reporting, recordkeeping and other compliance requirements of the proposed action	4.3, 5.0
Description of each selected alternative	2.0	Identification of all relevant Federal rules	5.0, 6.0
An economic analysis of the expected effects of each selected alternative relative to status quo	4.3		

6.1 EO 12866 (Regulatory Impact Review)

EO 12866, Regulatory Planning and Review, was signed on September 30, 1993, and established guidelines for promulgating new regulations and reviewing existing regulations. The EO covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. The RIR provides a review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems.

The RIR analysis and the environmental analysis required by NEPA have many common elements, including a description of the management objectives, description of the fishery, statement of the problem, description of the alternatives and economic analysis, and have, therefore, been combined in this document. See Table 6.1 above for a reference of where to find the RIR elements in this EA.

The RIR is designed to determine whether the proposed actions could be considered “significant regulatory actions” according to EO 12866. The EO 12866 test requirements used to assess whether or not an action would be a “significant regulatory action” and the expected outcomes of

the proposed management alternative are discussed below. A regulatory program is “economically significant” if it is likely to result in the following effects:

1. Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.
2. Create a serious inconsistency or otherwise interfere with action taken or planned by another agency.
3. Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof.
4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this EO.

Based on the economic analysis found in section 4.3 of this EA, none of the alternatives are significant according to EO 12866. This action will not have a cumulative effect on the economy of \$100 million or more nor will it result in a major increase in costs to consumers, industries, government agencies, or geographical regions. The gross revenues generated from Pacific cod and dogfish fisheries coastwide are not expected to differ substantially as a result of this action. In addition, none of the alternatives are expected to create a serious inconsistency or otherwise interfere with action taken or planned by another agency; materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or raise novel legal or policy issues arising out of legal mandates.

6.2 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA), 5 U.S.C. 603 *et seq.*, requires government agencies to assess the effects that various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those effects. When an agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact on small businesses, non-profit enterprises, local governments, and other small entities. The IRFA is to aid the agency in considering all reasonable regulatory alternatives that would minimize the economic impact on affected small entities. To ensure a broad consideration of impacts on small entities, NMFS has prepared this IRFA without first making the threshold determination whether this proposed action could be certified as not having a significant economic impact on a substantial number of small entities. NMFS must determine such certification to be appropriate if established by information received in the public comment period.

A fish-harvesting business is considered a "small" business by the Small Business Administration (SBA) if it has annual receipts not in excess of \$3.5 million. For related fish-processing businesses, a small business is one that employs 500 or fewer persons. For wholesale businesses, a small business is one that employs not more than 100 people. For marinas and charter/party boats, a small business is one with annual receipts not in excess of \$5.0 million. The following businesses are summarized from the 2005-2006 Specs EIS RFA analysis, Section 11.3.2.

Seafood Harvesters - Most of the vessels, processors, and related businesses engaged in the West Coast groundfish fishery would be classified as small businesses under these definitions. Table 8-4

in Appendix A of the 2005-2006 Specs EIS shows that of a total 4,588 commercial vessels fishing from West Coast ports, 1,709 vessels had some involvement in West Coast groundfish fisheries. Of these, 421 held groundfish limited entry permits, and an additional 771 participated in open access groundfish fisheries and derived more than 5% of total revenue from groundfish.

Buyers/Processors - Table 7-1 in Appendix A of the 2005-2006 Specs EIS shows that out of a total 1,780 fish buyers on the West Coast, 732 bought at least some groundfish from commercial fishermen. All but 19 of these purchased less than \$2 million worth of total harvest during the year 2000. A few buyers/processors may not qualify as small businesses under the SBA criterion. Fewer than nine buyers/processors who process groundfish were listed as employing more than 500 people (Warren 2004). However the employee counts for these buyers/processors include operations in Alaska and processing for species other than groundfish. Many of the listed employees are therefore likely in Alaska due to the much higher volumes of fish processing done there. Finally, since most processing employment is seasonal, many of these buyers/processors would not be expected to employ more than 500 employees year round.

Section 603 (b) of the RFA identifies the elements that should be included in the IRFA. These are bulleted below, followed by information that addresses each element.

- A description of the reasons why action by the agency is being considered.
The purpose and need for the proposed action are discussed in Section 1.2.
- A succinct statement of the objectives of, and legal basis for, the proposed rule.
The description of purpose and need in Section 1.2 also outlines the objectives of the proposed action. The introductory paragraphs in Section 1.1 and Section 1.3, background to the purpose and need, provide information on the legal basis for the proposed action (proposed rule).
- A description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply.
The economic impact of these management measures for Pacific cod and spiny dogfish will be shared among groundfish buyers and commercial harvesters. It is estimated there are about 730 groundfish buyers and 1,700 commercial vessels coastwide that may be affected by these actions. Most of these entities would probably qualify as small businesses under the Small Business Administration's (SBA) criteria, with the exception of fewer than 5 buyers/processors. The proposed action will affect commercial fisheries primarily off the coasts of Washington and Oregon. The proposed action is expected to result in either no impact at all, or a modest decrease in access to Pacific cod and spiny dogfish fishing for commercial fishermen and operators currently operating in the fishery. However, it may foreclose opportunity for large vessels who could potentially enter the fishery as the trip limits are based on the current smaller size structure of existing participants.
- A description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.

There are no new reporting or record-keeping requirements that are proposed as part of this action.

- An identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.
No federal rules have been identified that duplicate, overlap, or conflict with the alternatives. Public comment is hereby solicited, identifying such rules.
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives and that would minimize any significant economic impact of the proposed rule on small entities.

This EA includes a range of alternatives, discussed in Section 2.0 and 4.0, which were considered by the Council. The alternatives ranged from Alternative 1, status quo or unlimited trip limits for spiny dogfish and Pacific cod, to Alternative 3, the most conservative or constraining trip limits. Alternatives 2 and 2a are intermediate trip limit levels. The preferred alternatives were Alternative 2 for Pacific cod and Alternative 2a for spiny dogfish. Alternatives 2, 2a and 3 vary only slightly in their trip limit levels and were structured to maintain current participation in the fishery without encouraging new participation. The alternatives accommodate most of the recent harvest levels in the fishery, with Alternative 3 being slightly constraining to some vessels. No significant economic impacts. No significant economic impacts are expected for small entities from this action.

7.0 LIST OF PREPARERS AND BIBLIOGRAPHY

7.1 List of Preparers

Michele Culver and Brian Culver, WDFW, provided fishery-specific data and background information, with administrative oversight and contributions from Merrick Burden and Jamie Goen, NMFS.

This EA/RIR was prepared in coordination and consultation with the National Marine Fisheries Service, Pacific Fishery Management Council, the Northwest Indian Fisheries Commission, the California Department of Fish and Game, and the Oregon Department of Fish and Wildlife.

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